



**COSTA MESA SANITARY DISTRICT**

**SEWER SYSTEM MANAGEMENT PLAN**

Prepared by

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**RCE 31720**

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## **I. GOAL**

### **A. INTRODUCTION**

The Costa Mesa Sanitary District (CMSD) is an independent special district governed by an independent five member Board of Directors elected at large by the residents. CMSD was formed in 1944, nine years before the City of Costa Mesa was incorporated, and provides wastewater service and solid waste collection. The boundaries of CMSD include the entire City of Costa Mesa and portions of the City of Newport Beach and the unincorporated territory of the County of Orange.

CMSD serves a residential population of approximately 116,700 plus various public, commercial, industrial and retail land uses. CMSD's facilities include 219.4 miles of gravity mainline, 4.8 miles of pressurize mainline, 108.8 miles of private property sewer lateral pipelines, 24,870 service lateral connections, 4,707 manholes and 20 pumping stations. A detailed list of the sizes and lengths of CMSD owned sewer lines can be found in the Costa Mesa Sanitary District's Sewer Master Plan.

CMSD's headquarters is located at 628 W. 19<sup>th</sup> Street, Costa Mesa and CMSD's Yard is located at 174 W. Wilson Street, Costa Mesa. The yard facility became operational in October 2010 and in February 2011, the U.S. Green Building Council (USGBC) certified the Yard as Platinum LEED (Leadership in Energy and Environmental Design) for demonstrating the building uses of sustainability practices and environmental protection. Platinum LEED is the highest certification awarded by USGBC.

On Saturday, February 23, 2013, the Santa Ana River Basin Section (SARBS) of the California Water Environment Association (CWEA) named the Costa Mesa Sanitary District (CMSD) as the recipient of the 2012 Collection System of the Year award. SARBS, which boundaries include Orange, Riverside and San Bernardino Counties, is one of 17 geographical local sections of CWEA that trains and certifies wastewater professionals and promotes sound policies to benefit society through protection and enhancement of statewide water environment. On April 19, 2013, CMSD won the award again from CWEA. The designation of 'Collection System of the Year' is one of the most prestigious SARBS/CWEA awards which recognizes an agency's significant accomplishments, safety record, training program, regulatory compliance, maintenance program along with documented administrative and emergency procedures.

The Santa Ana Region of the State Water Quality Control Board oversees the water quality in the local waters of the State, particularly the Pacific Ocean and the Newport Beach Upper and Lower Bay. The beaches along the coast have been closed numerous times due to contaminated surface water runoff and sewer spills and the closures have impacted the economy associated with summer beach activity.

In response to the beach closures, the Regional Water Quality Control Board adopted new storm drain and sewer regulations. The sewer regulations, termed the Waste Discharge Requirements (WDR), were adopted on April 26, 2002, and applied to all the sewer system owners in Orange County whose lines are tributary to the Orange County Sanitation District treatment plants. Therefore, these regulations applied directly to the Costa Mesa Sanitary District. Subsequent to the regional order, on May 2, 2006 a statewide WDR was adopted and the local order was rescinded.

One of the requirements of the WDR is the preparation and implementation of a comprehensive Sewer System Management Plan (SSMP). By preparing and practicing the procedures in the plan, the occurrence of sewer spills should decrease. This update to the SSMP will reflect the changes occurring at CMSD since the SSMP was last revised and the updates comply with the September 15, 2015 Guide for Developing and Updating SSMPs.

Along with the recommendation to the Board of Directors to certify and adopt the SSMP is to also direct CMSD staff to continually update the plan and bring it back with significant changes to the Board at appropriate intervals for approval.

The Costa Mesa Sanitary District recognizes the importance of protecting ocean water quality by preventing sewer spills and has historically taken a proactive approach to comprehensive sewer system management.

## B. REGULATORY BACKGROUND

The Costa Mesa Sanitary District lies in Region 8 of the State Water Resources Control Board. The Region 8 WDR adopted in 2002 was partially in response to the Orange County Grand Jury report that analyzed ocean water pollution and identified grease in sewer lines as a substantial cause of sanitary sewer overflows (SSOs). Along with the WDR, the Regional Water Quality Control Board (RWQCB) also adopted Monitoring and Reporting Requirements in order to insure consistent and accurate sewer spill reporting.

After the State Water Resources Control Board viewed the success of the regional WDR, a statewide order was adopted and the local order rescinded. The statewide order is nearly identical to the regional order and covers all sewer system owners in the State of California who own one mile or more of sewer lines. The statewide order is Order No. R3-2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Overflows, (SSOs) and was adopted on May 2, 2006. The Costa Mesa Sanitary District Sewer System Management Plan (SSMP) is tailored to meet this order.

The SWRCB developed the WDR to promote uniformity in the management of California's wastewater collection systems and reduce SSOs. The SWRCB found that cities and districts that have implemented SSMPs similar to this have been effective not only in improving spill reporting, but also in mitigating SSO impacts. Data also

supported the conclusion that better collection system management will benefit water quality and prolong the life of sanitary sewer systems.

The SWRCB may regulate sanitary sewer overflows based on authority in the Federal Clean Water Act (EPA 2002) and the Porter-Cologne Water Quality Control Act, Section 13263 (California Water Code of Regulation 2006).

### C. PURPOSE AND GOALS OF THE SSMP

This document has been developed to comply with WDR R3-2006-003-DWQ and sets specific wastewater collection system requirements and upholds State water quality standards. The WDR requires permittees to prepare and implement a SSMP in order to:

- Protect public health and the environment,
- Provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system in order to provide reliable service in the future,
- Prevent or minimize the frequency of SSOs,
- Ensure corrective action is taken in a timely manner, and.
- Maintain and improve the condition and performance of the District's wastewater collection system.

Sanitary sewer overflows are overflows from sanitary sewer systems of domestic, industrial, and/or commercial wastewater. SSOs may cause a public nuisance, particularly when untreated wastewater is discharged to waters designated for contact recreation. CMSD will proactively manage the operations of its sewage system in a way that prevents SSOs.

## **II. ORGANIZATION**

### **A. RESPONSIBLE OFFICIALS**

The Legally Responsible Official (LRO) for the Costa Mesa Sanitary District is the District Engineer. The Wastewater Maintenance Superintendent and General Manager serve as CMSD's alternate LROs.

### **B. RESPONSIBILITIES FOR THE CMSD SSMP**

#### **General Manager**

Alternate Legally Responsible Official (LRO)

Responsible for overseeing the day to day operations of CMSD.

Establish administrative policies and implements said policies.

Allocate resources.

Delegate responsibility

Serves as public information officer

Authorizes outside contractors to perform services.

#### **District Engineer**

Legally Responsible Official (LRO)

Design and construction standards and specifications for sewer systems.

Procedures and standards for inspecting and testing the installation of new and rehabilitated sewer systems.

System Evaluation and Capacity Assurance Plan / Capital Improvement Program including:

- Hydraulic capacity evaluation.
- Capacity enhancement measures.
- Schedule replacements.
- Regular visual and TV inspections of manholes and sewer pipes.
- Prioritizing and scheduling rehabilitation projects.
- Rehabilitation and replacement plan to identify and prioritize system deficiencies including potential sources for future SSOs.

Coordinates FOG program with EEC Environmental

Collaborates with PIO on public communications

Regulatory notifications and communications (including SSO reporting on CIWQS)

FOG (fats, oil, and grease) program enforcement, education and outreach

#### Wastewater Maintenance Superintendent

Alternate Legally Responsible Official (LRO)

Primary responder for SSOs

Implements Emergency Response

Supervises field crew, including in-house cleaning.

Contract manager for outside services.

Routine preventive operation and maintenance activities.

Allocates program resources.

Assigns work orders through the Computerized Maintenance Management System (CMMS).

Staff training in sanitary sewer system operations and maintenance.

Equipment and replacement part inventories.

#### SCADA Technician/Industrial Electrician

Ensures CMSD's pump stations are maintained in a safe and effective working condition.

Troubleshoots electrical control panels.

Monitors the Supervisory Control and Data Acquisition (SCADA) system.

Monitors smart-cover sensors.

Performs routine preventive maintenance on pump stations.

Conducts annual pump station inspections

Receives training in wastewater collection system operations and maintenance.

Assign to on-call and/or standby duties.

#### Inspector

Ensures new construction meets standards.



Implements emergency response.

Oversight of contractors hired to work on CMSD facilities.

Ensures private plumbers are complying with CMSD's Sewer Lateral Assistance Program.

#### Wastewater Maintenance Workers I, II & III

Primary responder for SSOs.

Implements Emergency Response.

Performs routine preventive operation and maintenance activities.

Receives training in wastewater collection system operations and maintenance.

Assigned to on-call and/or standby duties.

#### Management Analyst II

Prepares request for proposals for SSMP self-auditing services

Administers SSMP self-auditing contract.

#### Permit Technician

Reviews wastewater plans and specifications for compliance with applicable codes and standards.

Issues permits for construction projects.

#### EEC Environmental (Contractor)

Administers the District's FOG Program

Performs inspections at food service establishments

Prepares GIS maps

Maintains and updates data in GIS and CMMS

#### C&R Drains (Contractor)

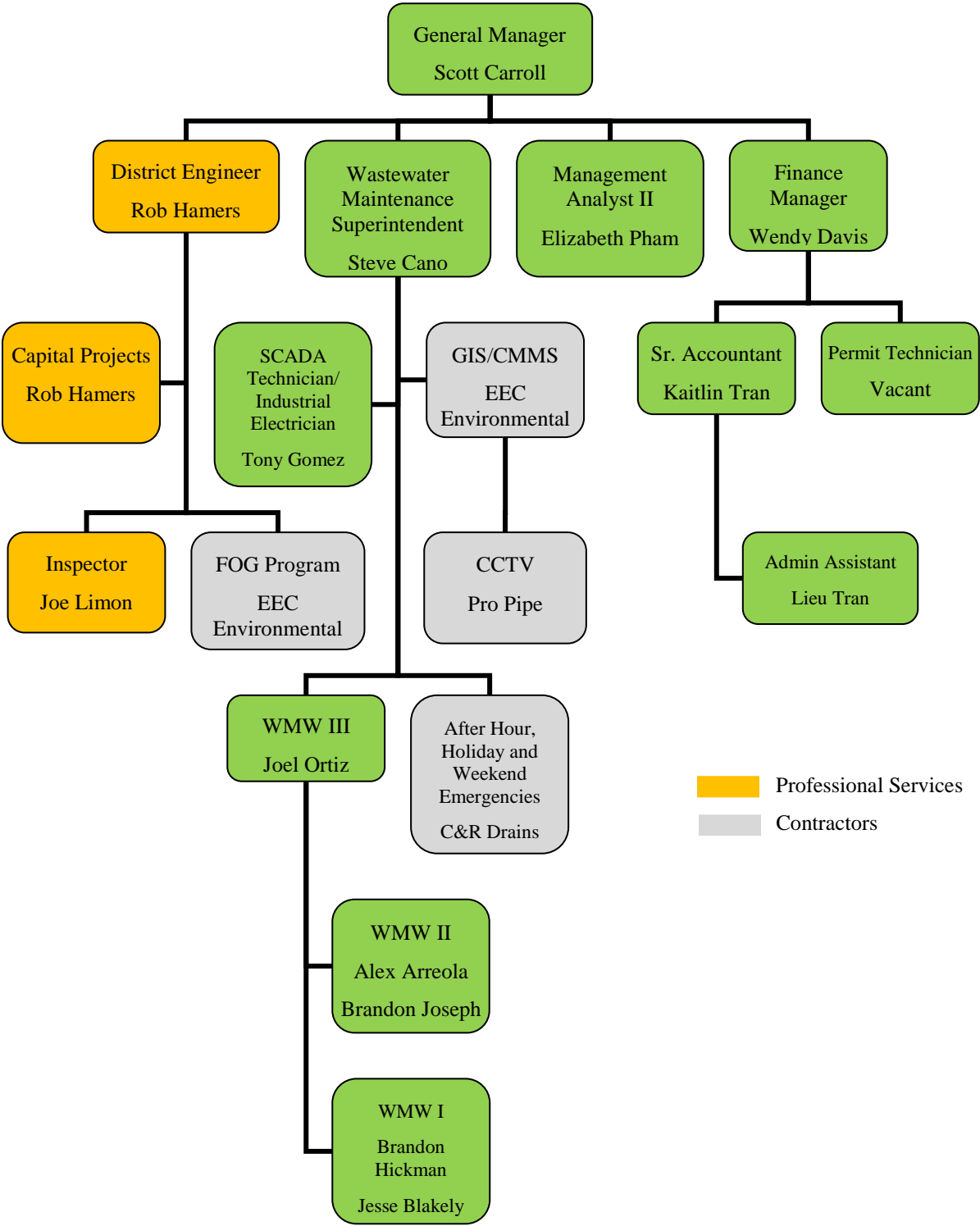
Performs emergency response during after hours, holidays and weekends.

Receives training on overflow response.

#### Pro Pipe (Contractor)

Performs CCTV

Figure 2-1: CMSD SSMP Organization Chart



**Table 2-1: CMSD Contacts Responsible for SSMP**

<b>SSMP Element</b>	<b>Responsible Party (Position)</b>	<b>Responsible Party (Name)</b>	<b>Phone Number</b>	<b>Email Address</b>
<b>Introduction</b>	General Manager	Scott Carroll	714-800-3296	scarroll@cmsdca.gov
<b>1 – Goals</b>	General Manager	Scott Carroll	714-800-3296	scarroll@cmsdca.gov
<b>2 – Organization</b>	General Manager	Scott Carroll	714-800-3296	scarroll@cmsdca.gov
<b>3 – Legal Authority</b>	District Engineer	Rob Hamers	714-293-2727	rhamers@robhamers.com
<b>4 – O&amp;M Program</b>	Wastewater Maintenance Superintendent	Steve Cano	949-281-6785	scano@cmsdca.gov
<b>5 – Design &amp; Performance Provisions</b>	District Engineer	Rob Hamers	714-293-2727	rhamers@robhamers.com
<b>6 – Overflow Emergency Response Program</b>	Wastewater Maintenance Superintendent	Steve Cano	949-281-6785	scano@cmsdca.gov
<b>7 – FOG Control Program</b>	District Engineer & EEC Environmental	Rob Hamers	714-293-2727	rhamers@robhamers.com
<b>8 - SECAP</b>	District Engineer	Rob Hamers	714-293-2727	rhamers@robhamers.com
<b>9 – Monitoring, Measurement, and Program Modifications</b>	General Manager	Scott Carroll	714-800-3296	scarroll@cmsdca.gov
<b>10 – SSMP Audits</b>	Management Analyst II	Elizabeth Pham	949-645-8400, Ext. 230	epham@cmsdca.gov
<b>11- Communication</b>	General Manager	Scott Carroll	714-800-3296	scarroll@cmsdca.gov
<b>Change Log</b>	General Manager	Scott Carroll	714-800-3296	scarroll@cmsdca.gov
<b>Appendices</b>	General Manager	Scott Carroll	714-800-3296	scarroll@cmsdca.gov

## C. CHAIN OF COMMUNICATION FOR REPORTING SSOs

The SSO reporting chain of communication is illustrated in Figure 6-1, Chapter VI, Overflow Emergency Response Plan, which details the procedures and responsibilities during an SSO event. The process is briefly described below.

After receiving a complaint or report of a potential SSO, the Wastewater Maintenance Superintendent and the District Engineer are notified. In the case of a power failure or other emergency within a pumping station, an alarm auto-dialer system will call to inform all wastewater maintenance employees, District Engineer and the General Manager. The first responder will report an overflow or hazard immediately to the District Engineer and then to the General Manager. The General Manager is responsible for reporting the overflow, via telephone, to the appropriate regulatory agencies. The response process for SSOs is described in section VI in more detail.

The District's Engineer is a Legally Responsible Official (LRO) and is responsible for overseeing the reporting process. The District Engineer receives the spill report from the Wastewater Maintenance Superintendent and drafts up the required report with consideration given to volume calculations, vacuum and wash down operations, cause of spill, timeliness of response, etc. After discussions are complete, the report is finalized, reviewed by the General Manager and then transmitted to the appropriate authorities by the District Engineer. CMSD reports all spills except private property spills where the spill is contained on-site.

As a first priority during a sewer spill, CMSD staff and field crews notify the appropriate personnel by phone that a spill has occurred instead of depending on the report as a means of notification.

If the spill is significant or the result of a major emergency involving CMSD sewer lines or pumping stations, CMSD follows a pre-described procedure. In order to properly respond to a sewer system emergency that requires reconstruction of CMSD sewer facilities, CMSD placed its long standing high quality contractors on emergency services agreements. The list contains contractors who have demonstrated expertise in pumping station construction, pipeline construction, televising, and pipeline rehabilitation utilizing trenchless technology. These contractors are staffed with well-experienced workers who are able to handle the scope of emergencies related to sanitary sewer systems.

### **III. LEGAL AUTHORITY**

The District must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:

- (A) Prevent illicit discharges into its sanitary sewer system.
- (B) Require that sewers and connections be properly designed and constructed.
- (C) Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by CMSD.
- (D) Limit the discharge of fats, oils, and grease and other debris that may cause blockages, and
- (E) Enforce any violation of its sewer ordinances.

#### **A. PREVENT ILLICIT DISCHARGES INTO ITS SANITARY SEWER SYSTEM**

The Sanitary District has the power to install sewers and enact regulations related thereto, including the prohibition of private sewer systems and requiring all inhabited property to be connected to CMSD sewers (Health and Safety Code Section 6400 et seq.) Once exercised, a sanitary district's power is controlling over any general law city or county regulation pertaining to the same subject (Home Gardens Sanitary District v. City of Corona (2002) 116 Cal.Rptr.2d 638.)

A permit from CMSD is required to connect to, use, or maintain a connection to the CMSD's facilities (District Operations Code Section 6.04.060 (a)). Any person, firm or corporation that connects or discharges to CMSD's wastewater system without a valid permit is guilty of a misdemeanor (CMSD Operations Code Section 6.04.060 (f)).

In the Costa Mesa Sanitary District, illegal connections are usually connections to the sewer system by property owners who have drainage problems due to flat areas and low spots and who solve those problems by draining those areas to an inlet that is connected to the sewer system. When instances of these illegal connections are found, the property owner is required to immediately remove the connection.

#### **B. REQUIRE THAT SEWERS AND CONNECTIONS BE PROPERLY DESIGNED AND CONSTRUCTED**

Results of CMSD-wide video inspection show that vitrified clay pipe will remain in excellent condition if proper construction practices are followed. Providing continuous inspection during the installation procedure insures the proper construction practices are followed. Continuous inspection of other utilities being installed in the vicinity of the sewer lines insures proper protection methods are provided for the sewer lines and lengthens the life expectancy of the lines.

Title 6 of the Operations Code regulates sewer construction. All sewer construction must be in accordance with CMSD standards (Section 6.01.010). The type of materials and inspection requirements by CMSD staff are provided in Chapter 6.01.

The Sanitary District has its Standard Plans and Specifications for the Construction of Sanitary Sewers that insures the sewer lines and connections are properly designed and constructed. CMSD's specifications by reference incorporate the Standard Plans and Specifications for Public Works Construction (Green Book), which assists in insuring proper design and construction of sewer facilities.

#### C. MAINTENANCE, INSPECTION, OR REPAIRS OF SEWER LATERALS

The Costa Mesa Sanitary District does not own or maintain the sewer laterals within CMSD boundary. By ordinance, the sewer laterals, even when located within public streets remain private and are owned and maintained by the property owner (CMSD Operations Code Chapter 6.02.020).

CMSD does require CCTV inspection and repairs of private sewer laterals under certain conditions that will assist in preventing sewer spills (CMSD Operations Code Chapter 6.03).

#### D. LIMIT THE DISCHARGE OF FATS, OILS, AND GREASE AND OTHER DEBRIS THAT MAY CAUSE BLOCKAGES

Every owner, tenant and persons using property shall have a duty not to cause, permit or allow the accumulation of grease in CMSD's sewer line so that sewage spills may occur. Such persons shall use reasonable methods to reduce grease accumulation in the CMSD's sewer lines including but not limited to reducing or eliminating the grease that is deposited in the sewer and utilizing enzymes and similar products that prevent grease build-up. No person shall discharge grease into the sewer system so as to cause an accumulation in the CMSD's lines so as to substantially contribute to the possibility of a sewage overflow (CMSD Operations Code Section 6.07.040).

On November 21, 2011, CMSD implemented a convenient program for residents to dispose of unwanted cooking grease. In a partnership with the Orange Coast College (OCC), residents can bring any type of grease filled jugs, bottles and/or containers to the OCC Recycling Center located on Adams Street between Harbor Blvd and Fairview Road in Costa Mesa. The grease is poured into one of the two 50 gallon vats that are stored in front of the recycling center. When the vats are full, a contractor will arrive to pump out the grease and then transport the material to a rendering facility where the grease is recycled into useable products such as candles, soap, pet food and biofuel for automobiles.

No Food Service Establishment shall discharge into the CMSD's system without obtaining a permit from CMSD describing the business operations and discharge and any FOG prevention measures being undertaken or to be undertaken to reduce the

discharge of FOG into CMSD's system in accordance with this chapter (CMSD Operations Code Section 6.07.050).

CMSD has adopted Operations Code Chapter 6.07, which control fats, oils, and greases (FOG). Grease has been identified as the number one cause of sewer line stoppages and spills by the Sanitary District and by the Orange County Grand Jury who conducted a countywide study. Because of this finding, FOG has been identified as the most important first step in improving sewer system reliability.

As stated earlier, CMSD has the legal authority to control discharges to the sewer system for all sewer facilities located on private property that are outside any structures located on the property. This authority allows CMSD to require grease interceptors, as by Code the interceptor is located outside the building.

The legal authority for plumbing fixtures inside a building rests with the local agency building department. The Sanitary District has been working with the Building Officials of the three building departments within the District's service area (Costa Mesa, Newport Beach, and Orange County) to urge adoption of FOG reduction policies, which will be consistent with the goal of removing FOG from the sewer system.

CMSD controls the discharge of other debris into the sewer system through its ordinances and through the ordinances of the Orange County Sanitation District, whose regulations prohibit unapproved debris from being discharged into the system (CMSD Operations Code Chapter 6.09). Both the Costa Mesa Sanitary District and the Orange County Sanitation District only allow discharges from permanently install plumbing fixtures unless authorized by special discharge permit.

#### E. ENFORCEMENT OF VIOLATIONS OF CMSD SEWER ORDINANCES

CMSD has enacted an Operations Code by ordinance. Any person, firm, or corporation violating the penal provisions of this ordinance shall be guilty of a misdemeanor and punishable by a fine of up to one thousand dollars per day and/or up to six months in jail (Section 1.02.010).

Violations of the connection permit provisions of the Operations Code are also subject to administrative citations (Section 1.06.010(d)).

Violations of the Operations Code may result in termination of service in accordance with Health and Safety Code Section 6523.2.

CMSD is also authorized to abate conditions on property and to collect the costs on the assessment roll or as a lien (CMSD Operations Code Chapter 6.10).

**Table 3-1: Legal Authority Checklist**

<b>Requirements</b>	<b>CMSD Code Reference</b>
<b>Public Wastewater System</b>	
Ability to prevent illicit discharges into the wastewater collection system	CMSD Operations Code Section 6.04.060(a)
Ability to require that sewers and connections be properly designed and constructed.	CMSD Operations Code Chapter 6.01
<b>Laterals</b>	
CMSD does not own or maintain the sewer laterals within CMSD service area. Laterals are owned and maintained by private property owners.	Ordinance No. 8 and 81 CMSD Operations Code Section 6.02.020
CMSD requires private property owners to televise and repair their laterals under certain conditions.	CMSD Operations Code Chapter 6.03
<b>FOG Source Control</b>	
Ability to limit the discharge of FOG and other debris that may cause blockages.	Ordinance No. 81 CMSD Operations Code Section 6.07.040
No Food Service Establishment shall discharge into CMSD's wastewater system without obtaining a permit	Ordinance No. 51 CMSD Operations Code Section 6.07.050
Food Service Establishments shall implement Best Management Practices.	Ordinance No. 113 Section 6.07.060
<b>Enforcement</b>	
Ability to enforce any violation of CMSD wastewater ordinances.	CMSD Operations Code Chapters 1.02, 1.03 and 1.06 6.08, 6.09, 6.10



## **IV. OPERATION AND MAINTENANCE PROGRAM**

### **A. THE CMSD SANITARY SEWER SYSTEM MAP**

The Costa Mesa Sanitary District uses Geographic Information System (GIS) technology to create, maintain, and manage maps and data sets associated with its wastewater collection system. The wastewater system GIS mapping is maintained by EEC Environmental, a private contractor under contract with CMSD. Pipe inventory data includes ownership, installation year, diameter, length, material, slope, status, record drawing reference and other information. Manhole inventory data includes ownership, installation year, shaft diameter, depth, invert elevation, rim elevation, record drawing reference and other information.

In FY 2014-15, CMSD installed wireless tablets in its wastewater fleet that enables staff to gain access to GIS maps and Computerized Maintenance Management System (CMMS) work orders. Field staff no longer need to thumb through large sewer and storm drain atlas maps or carry large binders of work orders. With the tablets and access to CMSD's Cityworks asset management system, powered by Esri's ArcGIS, all the information they need is at their fingertips. The crew cleans over 200 miles of pipeline a year, so access to CMSD's asset management system gives them important information such as last cleaning date, notes about obstructions (if any), pipeline length and material, pipeline and manhole conditions, and CCTV observations. Cityworks, empowers the crews to access work orders, maintenance history, and key performance indicators. With a click of a button staff can query specific data in the field such as pipeline condition, maintenance history, photos, lift station run times, and asset lifecycles. The tablets can be removed from inside vehicle cabs and used in the field to take pictures, open and close work orders, take notes, send emails, search for reports, or log inspections among other things. Hard copy Atlas maps are also available and maintained in CMSD's fleet and in the vehicles of its after-hours emergency responder, C&R Drains. CMSD's new GIS atlas maps are reprinted whenever significant updates are made.

The locations of all the storm water conveyance facilities are shown on separate maps prepared by the agencies owning the storm drains and copies of these plans in reduced size format have been distributed to the District Engineer, Inspector, Field Crews, Administrative Office, and to CMSD's after-hour emergency responder, C&R Drains. CMSD recognizes the link between a sewer spill and its travel in a storm drain facility to the receiving waters. CMSD has educated its staff and C&R Drains to understand the storm drain network and utilize it to capture a spill if it has entered the storm drain system.

CMSD understands the NPDES regulations for storm drain system owners contain requirements prohibiting sewer system spills into the storm drains. The NPDES requires the storm drain system owners to adopt measures that will decrease the possibility of sewer spills reaching the waters of the state.

## B. PREVENTATIVE MAINTENANCE PLAN

### 1. Proactive Wastewater System Cleaning

The District revised its proactive preventative maintenance program from cleaning the entire system once every two years to once in 18 months. CMSD acquired another wastewater combination cleaning truck (VacAll) and hired two additional wastewater maintenance workers. CMSD now has two wastewater combination cleaning trucks and four employees dedicated to the cleaning equipment. One of the benefits of having two cleaning trucks is an increase in the number of cleaning days. Due to CMSD's 9/80 work schedule, the system was being cleaned 234 days a year because the cleaning crew was off every other Friday. A second cleaning truck and crew is allowing CMSD to clean 260 days, which includes every Friday of the week. Another benefit for a second cleaning truck and crew is a faster response time for emergencies and CMSD will less likely be dependent on mutual aid from other organizations. Appendix 1 provides a map of CMSD's sewer system that includes pump stations, pressurized mains, gravity mains, and inverted siphons.

### 2. Hot Spots

Areas needing more frequent cleaning – known as “hot spots” or enhanced maintenance areas – are cleaned as frequently as necessary due to root intrusion, grease accumulation, or structural defects. These include the inverted siphons that run under flood control channels or commercial areas with multiple restaurants. Cleaning frequencies for hot spots range from twice a year to four times a year.

On May 21, 2015, CMSD Board of Directors adopted the 2015-20 Strategic Plan. Strategic Goal No. 1.3 is to “Reduce Hot Spot locations to less than 30”. Since 2011, CMSD has successfully reduced the number of hot spot locations from 95 to 34. Every quarter (once every three months), CMSD staff, engineer, inspector and contractor EEC Environmental analyze the causes for labeling line segments as hot spots and then the group will determine a course of action to remedy line segments and remove them from the hot spot list. Sample courses of action include installing cured-in-place short liners and top hats and full length liners to eliminate root intrusion, repairing line segments and replacing pipes that have sags and source control (fats, oil and grease). On October 13, 2015, CMSD developed the following plan to reduce hotspots to less than 30 locations.

a. Roots

Many sanitary agencies use foaming root control chemicals as a method to eliminate and control the growth of roots in sewer lines. Razorooter II has proven to be the most effective and least toxic product for sanitary sewer systems. With the assistance from Razorooter II manufacturer, Duke's Root Control, Inc. CMSD will be applying this foam root control chemical at several hot spot locations known to have root infestation.

b. Grease

Source control methods are proving to be very effective to reducing grease in the sewer system. EEC Environmental will randomly visit restaurants to inspect their grease interceptor (GI) cleaning log and best management practices. The last grease related sanitary sewer overflow (SSO) occurred in 2012. However, some locations are hotspots because the restaurant(s) nearby do not have grease interceptors. When the FOG Program was implemented in 2006, CMSD did not mandate existing restaurants to install grease interceptors or traps. The FOG Program was revised in 2010 that require newly constructed or remodeled restaurants install grease interceptors and the Board of Directors may now order restaurants install GI's if there is an imminent danger of future spills caused by grease.

Requiring newly constructed or remodeled restaurants to install grease interceptors will help reduce the number of hotspots. However, grease interceptors can be cost prohibitive for small family owned restaurants. Grease interceptors can cost \$8,000 to \$20,000. Therefore, the Board of Directors directed staff to develop an assistance program where CMSD can reimburse small family restaurants up to 50% of the cost to procure and install grease interceptors. The proposed program that will include eligibility requirements, parameters and funding options will be presented to the Board of Directors in FY 16.

c. Structural

Structural hotspots mean there is a severe sag in the line. At some locations the sag is holding grease. CMSD determined that it is more cost effective to continue with high frequency cleaning rather than repairing sags. For instance, the cost to clean HS 10 (Puente Ave at Victoria) four times a year is \$750. It will cost \$105,000 to repair this line segment. The payback for cleaning versus repairing is 68 years. Because repairing structural hotspots is cost prohibitive, CMSD believes these types of hotspots will be on a permanent high frequency cleaning list. Currently, there are ten permanent hotspots in which all ten have structural defects.

### 3. Pump Station Operation and Maintenance

CMSD currently owns, operates and maintains 20 wastewater pump stations. CMSD, in cooperation with Orange County Sanitation District, is planning to eliminate five lift stations (Seabluff, Westbluff, Canyon, President and 19<sup>th</sup> Street Lift Stations) by 2019. On March 27, 2014, the Board of Directors approved the creation of a new position dedicated to the operations and maintenance of lift stations. The new position is called SCADA Technician/Industrial Electrician and the position was filled on July 14, 2014. Each of the lift stations are equipped with supervisory control and data acquisition (SCADA) and monitored daily by CMSD's SCADA Technician/Industrial Electrician. The SCADA Technician/Industrial Electrician can monitor lift station SCADA data from the office or remotely on his cellular phone or from his wireless tablet. CMSD addresses SCADA alarms on a daily basis. A lift station maintenance crew (SCADA Technician/Industrial Electrician & Wastewater Maintenance Worker II) visits each lift station at least once weekly to perform operational inspection.

In 2014, CMSD purchased a new Ford F-750 Super Cab XLT utility truck with a mounted outrigger crane. The crane can lift up to 11,000 pounds and the truck came with special accessories such as welding equipment, generator, 2" trailer hitch, air compressor and pressure washer. The pump station maintenance crew uses the Ford F-750 to perform annual preventative maintenance at lift stations. The crew performs the following PM functions:

- Remove the motors to examine the impellers for wear and torque;
- Change the oil;
- Check the motor windings for resistance;
- Test and check the general condition of the pumps;
- Re-install the pumps and test the system.

Replacement parts are inventoried at the District Yard, located at 174 West Wilson Street, and replaced at pump stations in accordance with manufacturer operations and maintenance manual.

CMSD acquired emergency equipment to ensure the stations that require back up power had back up power in the event of a CMSD wide or regional wide power outage. Table 4-1 below describes the emergency equipment assigned to each station.

**Table 4-1: CMSD Pump Station Emergency Equipment**

<b>Lift Station</b>	<b>Location</b>	<b>Emergency Equipment</b>	<b>Exercise Frequency</b>	<b>Annual PM Performed by</b>
Canyon	999 Wilson St	On-site 50 kW Kohler generator	Monthly	PDE
Irvine	2677 Irvine Ave	On-site 150 kW natural gas Kohler generator	Monthly	PDE
Elden	146 Mesa Drive	On-site 99 HP Godwin bypass pump	Weekly	Xylem
Victoria	550 Victoria Street. At the end of Miner St	On-site 24 HP Godwin bypass pump	Weekly	Xylem
Mendoza	2899 Mendoza Drive	On-site 24 HP Godwin bypass pump	Weekly	Xylem
19 <sup>th</sup> Street	1035 W. 19 <sup>th</sup> St	Portable 17.1 kW bypass pump	Monthly	Charles King Company
Valley	1140 Aviemore Terrace	Portable 17.1 kW bypass pump	Monthly	Charles King Company
Corp Yard	2300 Placentia	Portable 17.1 kW bypass pump	Monthly	Charles King Company
Harbor	521 Wilson St	Portable 160 kW Generac generator	Monthly	YC Power
Adams	2054 Adams Ave	Portable 71 kW Generac generator	Monthly	YC Power
23 <sup>rd</sup> Street	2401 23 <sup>rd</sup> Street, NB	Portable 138 kW Generac generator	Monthly	YC Power
President	2034 President Place	Portable 36 kW Multiquip	Monthly	YC Power

		generator		
California	1803 California Street	Portable 33.6 kW Doosan generator	Monthly	YC Power
Santa Ana	2449 Santa Ana Ave	Portable 33.6 kW Doosan generator	Monthly	YC Power
Gisler	3003 Iowa St	Portable 33.6 kW Doosan generator	Monthly	YC Power
Iowa	1601 Iowa St	Portable 33.6 kW Doosan generator	Monthly	YC Power
Seabluff	1099 Seabluff Drive	Portable 33.6 kW Doosan generator	Monthly	YC Power
Westbluff	1059 Westward Lane	Portable 33.6 kW Doosan generator	Monthly	YC Power
South Coast Plaza	Parking lot behind Bloomingdale's	South Coast Plaza provides two sources of Edison power plus an on-site generator.		
21 <sup>st</sup> Street	114 21 <sup>st</sup> Street	Lift station has two-way manhole, which drains to the Elden Lift Station. No backup power is necessary.		

Every quarter (once every three months), the pump station crew, general manager, wastewater maintenance superintendent and district engineer meet to discuss pump station operations and needed repairs. The pump station crew will report what they are observing on a weekly basis and share with the group the pump run times according data collected from SCADA. Needed repairs are scheduled accordingly.

In an effort to help prevent private SSOs, CMSD staff came up with an innovative program to help diagnose the operational condition of private sewer pump stations. This service is free to any of the twenty-six existing private pump station owners that are currently located within CMSD service area. Upon request and after receiving permission to enter their property, staff will inspect the pumps and make recommendations for improvements. Staff will perform the following inspections:

- Observe station in normal working condition
- Check valves
- Exercise plug valves

- Check electrical wiring and components
- Check motor starters, breakers and fuses
- Check motor chords and check resistance
- Check motor windings
- Take amperage reading for the motors

At the conclusion of the inspection a list of recommended repairs will be given to the property owner/manager and it will be up to the owner/manager to perform those repairs. A list of qualified contractors will be provided to the owner/manager, but staff will not recommend a specific contractor.

In order to prevent private property sanitary sewer overflows from residential properties, the Board of Directors established a Sewer Lateral Assistance Program. The program provides matching funds of up to \$1,000 per parcel for residents to construct a sewer cleanout or clean, repair, rehabilitate, or replace their sewer lateral. The program is funded at a yearly level of \$200,000 exclusive of staff costs. The program has prevented a significant number of backups from occurring and is very well received by the residents. The program is set to remain in the yearly budget.

#### C. REHABILITATION AND REPLACEMENT PLAN

Approximately 73% of CMSD's wastewater system was constructed prior to 1965. See Figure 4-1 below. The vast majority of the system constructed before 1965 is made of vitrified clay pipe (VCP). Of the 27% of pipeline constructed after 1965, 93% is VCP. Other materials used for wastewater pipeline include ductile iron pipe (DIP), polyvinyl chloride (PVC) and cast iron pipe (CIP). See Figure 4-2 below regarding pipe material for the entire wastewater system.

Figure 4-1: CMSD Wastewater System Age

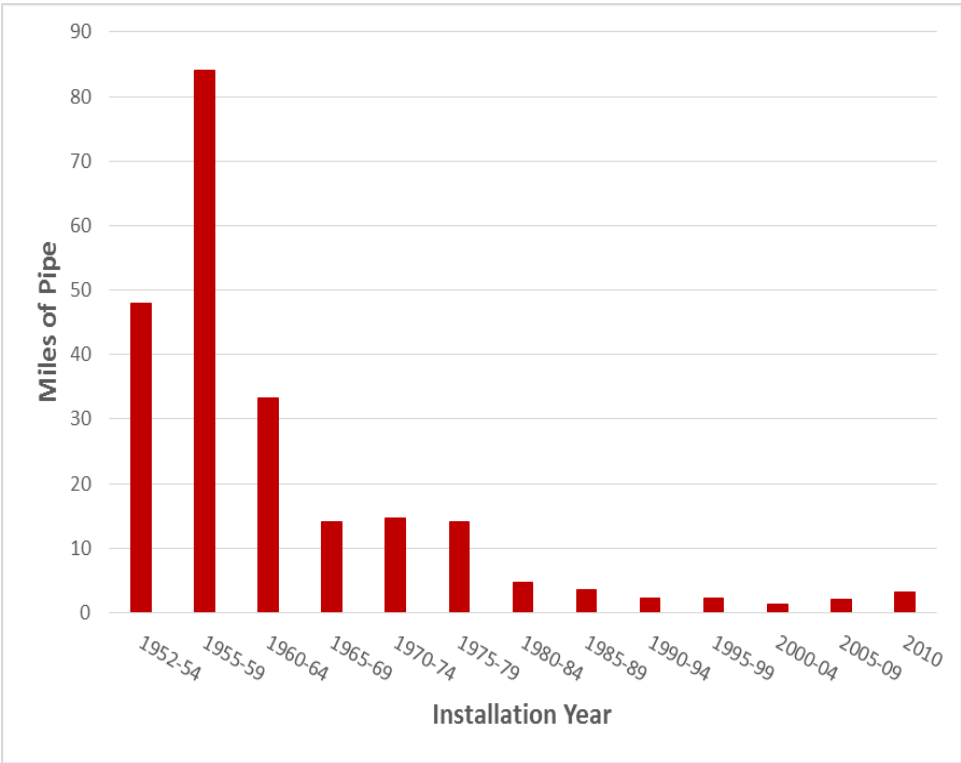
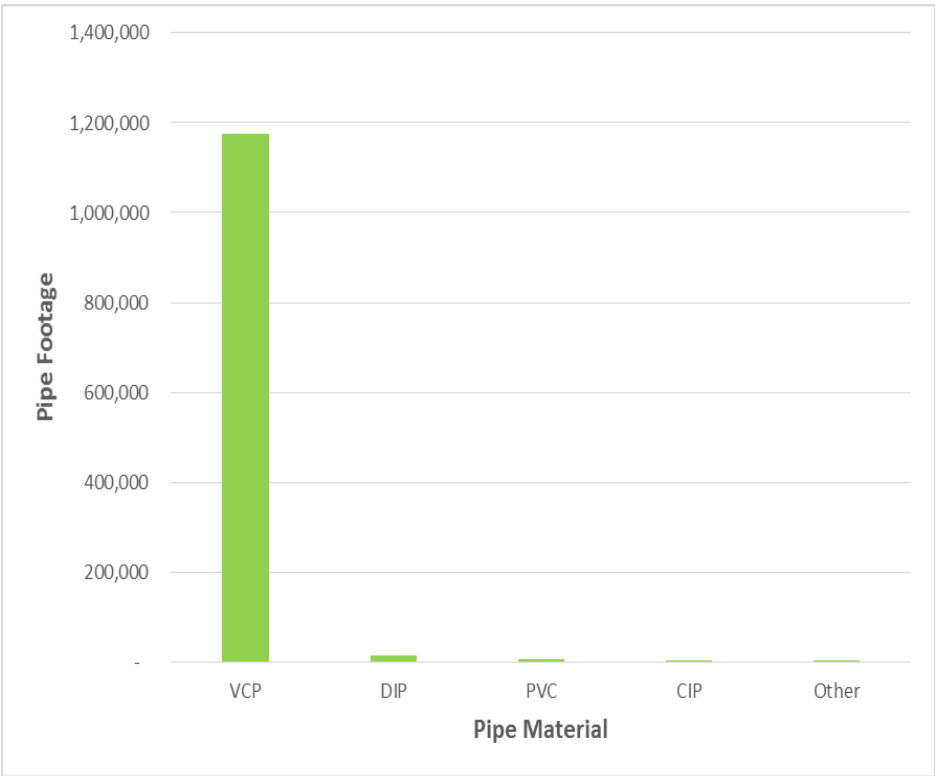


Figure 4-2: Pipe Material



The



oldest VCP pipe is 63 years with the average pipe age being 50 years old. Vitrified Clay Pipe is the most sustainable pipe available for wastewater systems. According to National Clay Pipe Institute (NCPI), the U.S. Army Corps of Engineers assumes a one hundred year service life for VCP and the Canadian National Research Council/Institute for Construction Research estimates the service life of VCP at 132 years (source: <http://www.ncpi.org/GreenStandards.asp>). The following describes how CMSD performs inspection and condition assessment for its wastewater manholes and pipelines.

### Manholes

CMSD has 4,707 wastewater manholes. 71% of CMSD manholes were constructed prior to 1967 and made of brick. The remaining 29% of manholes are made of concrete. Every year, when the wastewater maintenance crew is cleaning the system, they open the manholes to access the mainline. When the manholes are open, the crew will observe the condition of the manhole interior, specifically where corrosion has deteriorated the brick walls, concrete walls, steps or manhole bases. CMSD uses the National Association of Sewer Service Companies (NASSCO) Manhole Assessment Certification Program (MACP) format for documenting manhole conditions. The MACP method is similar to NASSCO's Pipeline Assessment Condition Program (PACP) system. The MACP process provides a system for identifying and documenting specific defects within the manhole. Furthermore, the MACP documentation includes taking note of physical features of the manhole which is valuable information for updating CMSD's asset management program and can provide useful information for determining rehabilitation options. The documentation of physical features are logged into GIS and CMSD's asset management program. Other manholes are evaluated based on their years of service described in the asset management plan. CMSD's standard form of rehabilitation for manholes is applying a polyurethane coating.

### Pipelines




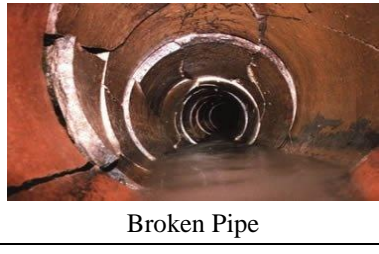

- a. Gravity Main: 2006-09 was the last time CMSD's entire wastewater system was televised. By viewing the videos from 2006-09 CMSD staff was able to assess the condition of gravity pipeline using NASSCO PACP standardized ratings. NASSCO has developed this standardized system in order to provide a consistent assessment of sanitary sewer conditions, as well as to provide the capability of benchmarking wastewater conditions in order to track deterioration over time. Two key concepts in collection system asset management are criticality and condition severity.

Critical wastewater can be classified as wastewater where costs associated with the failure are likely to be high. These are generally strategically important wastewater systems where costs of failure are driven by high

construction costs associated with repairs, costly traffic delays and impacts on property owners and stakeholders. In addition, proximity to waterways, flows, and potential impacts to public health and the environment should also be considered when classifying wastewater as critical.

Ratings of condition severity are provided by the PACP process and assist the owner in prioritizing the pipeline to be considered for renovation. The PACP process identifies the major deterioration factors and assigns a grade that is related to the likelihood of failure or collapse. Deterioration factors include surrounding soil condition, position of groundwater table, frequency of wastewater surcharging, above ground traffic loading, methods and materials used in construction, third party damages and defects such as roots, grease and debris causing more frequent cleaning. Deterioration factors are classified into categories of structural defects. PACP defects are assigned a grade of 1 to 5 in order of increasing severity, as described in Table 4-2

**Table 4-2: NASSCO PACP Grades**

Grade	Importance	Likelihood of Failure	Structural Grade Example
1 Excellent	Minor defects	Failure unlikely in the foreseeable future	
2 Good	Defects that have not begun to deteriorate	Pipe unlikely to fail for at least 20 years	 Longitudinal Cracking
3 Fair	Moderate defects that will continue to deteriorate	Pipe may fail in 10 to 20 years	 Multiple Fractures
4 Poor	Severe defects	Pipe will probably fail in 5 to 10 years	 Broken Pipe
5 Imminent Failure	Defect requires immediate action	Pipe has failed or will likely fail within the next 5 years	 Collapsed Pipe

Using the table above CMSD was able to identify 255 Grade 5 pipeline segments. All 255 segments have been repaired at a cost of \$984,200. The 2006-09 televising identified 1,600 Grade 4 line segments. In FY 2015-16 CMSD will begin televising the entire wastewater system in one to three years depending on the proposals received by contractors. The new CCTV will determine how many Grade 4 line segments have migrated to Grade 5. Grade 5 line segments identified in the 2015-16 CCTV will be planned for immediate repair

- b. Force Main: Force mains are considered critical pipeline in CMSD's wastewater system because of the velocity and volume of wastewater flowing through the system. For instance, the Elden Pump Station pumps 3,750 gallons per minute and has an 18" force main pipeline that is approximately 3,290 feet long making this station the largest of CMSD's assets. CMSD has four miles of force mains. Force mains near waterways such as the Santa Ana Delhi Channel and Santa Isabela Channel, both channels are tributary to Upper Newport Bay, and the Santa Ana River are considered critical assets. Force mains near Orange County Flood Control Channel are also considered critical to CMSD's wastewater system.

67% of force mains are made of cast iron pipe (CIP) or ductile iron pipe (DIP). 21% of force mains are made of other materials while 12% of force mains are made of polyvinyl chloride (PVC). Because CIP and DIP are susceptible to corrosion CMSD is proactive to replacing force mains before they fail. CMSD has used different methods to assess the condition of force mains such as potholing, sonar and recently in 2012 CMSD hired a company called, Pipeline Inspection and Condition Analysis Corp. or PICA, to provide direct condition assessment of force main pipes through the use of in-line inspection tools. PICA provided accurate measurements of remaining wall thickness for the Santa Ana Avenue and 23<sup>rd</sup> Street force mains. Their unique, patented technology can "see" through liners, scale and tubercles to detect graphitization and pitting, erosion and cracks. Their tools use electromagnetic technology which does not require the sensors to be in contact with the pipe wall inside the pipe. The tools have equal sensitivity to wall-loss regardless of whether it is on the inside or outside of the pipe. PICA can detect leaks, of course, but they can also detect thinning that will lead to leaks in the near future, allowing CMSD to make proactive repairs to prevent the next leak. However, this technology is expensive and requires cleaning the force main prior by injecting poly pigging through valves and pipeline, which could risk lodging the pig in valves or the pipeline.

CMSD staff prioritizes the replacement or rehabilitation of force mains by taking into consideration the pipeline age, flow and proximity to waterways. In the last two years, CMSD has rehabilitated and/or replaced three force mains (23<sup>rd</sup> Street, Santa Ana Avenue and Mendoza) totaling 1,646 feet and costing \$710,400. CMSD is currently planning to rehabilitate and/or replace three more force mains (Harbor, South Coast Plaza and Victoria) in FY 16 totaling 1,911 feet. A long term action plan for rehabilitating and/or replacing force mains is described in more details in CMSD's Capital Improvement Program (CIP).

The Costa Mesa Sanitary District Wastewater Master Plan is ten years old and needs updating to reflect subsequent growth and wastewater improvements. The Plan is scheduled for updating by starting with a hydraulic model capacity analysis in FY 16. CMSD has budgeted \$120,000 to complete the analysis that will identify deficiencies in CMSD's wastewater system and to establish improvements to reinforce and expand the existing system to meet wastewater demands in the future.

#### Capital Improvement Program (CIP)

Table 8-1 and 8-2 is a list of short and long term capital improvement projects that focuses on rehabilitating and/or replacing force mains and pump stations, Grade 5 pipeline segments and rehabilitating brick manholes. The CIP schedule could change after the Wastewater Master Plan is complete.

#### D. EDUCATION AND TRAINING

CMSD provides training on a regular basis to all employees performing operations and maintenance activities on the wastewater system assets. CMSD also requires contractors working on the wastewater system to be appropriately trained.

CMSD uses a combination of on-the-job training, conferences, seminars, and other training opportunities to provide technical training for its wastewater collection system staff. Vendors provide training for new equipment. Examples of technical training and training material CMSD's wastewater collection staff might take advantage of are listed below in Table 4-3.

**Table 4-3: Education and Training**

Sponsor	Event	Timeframe	Reference
Santa Ana River Basin Section (SARBS) of CWEA	Collections and Safety Seminar	Annually	<a href="http://www.sarbsofcwea.com">www.sarbsofcwea.com</a>
	PDC Seminars	Quarterly	
California Water Environment Association (CWEA)	State Conference	Annually	<a href="http://www.cwea.org">www.cwea.org</a>
	Southern Regional Safety Committee	Annually	
	Webinars	Quarterly	
Tri-State Conference	Annual Conference	Annually	<a href="http://www.tristateseminar.com">www.tristateseminar.com</a>
Orange County Sanitation District	OC WDR Steering Committee	Monthly	<a href="http://www.ocsd.com">www.ocsd.com</a>

In addition to technical training provided by outside resources, CMSD provides in-house technical training to equipment and collection system operations and maintenance. The focus on in-house training is hands-on training at a work site. All employees receive thorough training on the District's SSMP, their roles and the roles of others. The District conducts table top exercises to reinforce this training. All employees are required to keep relevant portions of the SSMP with them at all appropriate times.

The District Engineer is a member of the Orange County WDR Steering Committee and Orange County WDR General Group. As part of his activities, the District Engineer runs an education program consisting of a quarterly education seminar focusing on various aspects of a comprehensive sewer system management program. Seminar topics have included design and maintenance of sewer siphons, design and maintenance of sewer pumping stations, current no-dig technology advancements, education materials, etc.

Every CMSD employee in the wastewater maintenance division must obtain CWEA Collection System Maintenance Grade 1 certification within one year of employment. CMSD offers pay incentives, up to 1.5%, for each grade certification obtained. CMSD's Wastewater Maintenance Superintendent has successfully obtain Grade 4 certification, which is the highest grade for collection system maintenance. CMSD's Maintenance Worker III has a Grade 2 certification while four other maintenance workers have obtained Grade 1. One employee is studying for his Grade 2 certification exam.

CMSD documents all training activities using a Training Sign-In Sheet with signatures of attendees along with training agendas. These documents are managed and stored by the Wastewater Maintenance Superintendent.

Contractors responsible for being first responders to SSOs receive refresher training annually regarding CMSD's standard operating procedures for responding to SSOs. This training is documented using a Training Sign-In Sheet with signatures of attendees along with training agendas. All contractors are required to keep relevant portions of the District's SSMP with them at all appropriate times. In addition, CMSD requires contractors who work on CMSD wastewater projects to be qualified with wastewater collection system experience. Each contractor must provide CMSD with three references to demonstrate they are qualified to perform the work and CMSD performs reference checks to verify contractor qualifications. Also, during the process of selecting contractors for specific project, CMSD requires each contractor to submit a list of three local comparable projects performed using the equipment and techniques specified. These references are checked during the selection process for a specific project. If confined space entry is required contractors must provide evidence their staff are trained and certified to perform this task.

#### E. EQUIPMENT AND REPLACEMENT PARTS INVENTORY

For the Sanitary District, keeping critical replacement parts available encompasses stocking spare pumps that can be used as replacements while pumps are serviced or replaced. CMSD attempts to use the same model pumps in as many stations as possible to simplify maintenance and replacement. CMSD also attempts to use the identical equipment in each of the pumping stations, including electrical panels, liquid level sensors, back up sensors, valves, by-pass connection, etc.

CMSD has recently acquired new equipment to improve operations and maintenance performance. For instance, CMSD acquired five on-site emergency equipment for pump stations and another on-site equipment is planned for installation in FY 16. An on-site generator was acquired and installed at CMSD's Corporate Yard. CMSD acquired seven portable generators for pump station backup power and one 6 cubic yard combination wastewater cleaning truck. In addition, CMSD purchased a new Ford F-750 Super Cab XLT utility truck with a mounted outrigger crane. The crane can lift up to 11,000 pounds, which gives CMSD staff the ability to lift large pumps out of lift station wet wells. The utility truck has special accessories such as welding equipment, generator, 2" trailer hitch, air compressor and a pressure washer. CMSD also acquired a pre-owned  $\frac{3}{4}$  ton pickup truck with a tailgate hitch that is used for Below in Table 4-4 is a list of equipment that was recently acquired.

**Table 4-4: Acquired Equipment**

On-Site	Portable	Mobile
Kohler 50kW generator	Six Doosan G40 generators	2015 VacAll 6-Cubic yard combination wastewater cleaning truck
Kohler 150kW generator	Generac MMG 175 generator	2014 Ford F-750 Super Cab XLT with mounted outrigger crane
Godwin Bypass pump (2,500 GPM)		2007 Chevrolet Silverado 2500 ¾ ton pickup truck with tailgate hitch
Godwin Bypass pump (470 GPM)		
Godwin Bypass pump (350 GPM)		
Generac SD130 generator		

All equipment is maintained in accordance with owner's manual and the maintenance is performed by licensed and experienced contractors. Maintenance records are maintained by the Wastewater Maintenance Superintendent.

CMUSD has identified pump stations pumps and motors as critical spare parts. CMUSD owns spare pumps and motors for all pump stations. In addition, CMUSD owns spare level transducers enabling quick replacement when needed. CMUSD has designed backup pumps and backup power providing redundancy at each lift station. The Wastewater Maintenance Superintendent is responsible for maintaining and updating the inventory of critical parts and equipment on hand.

All parts are stored at CMUSD's Yard and all potential responders have been given appropriate keys and access codes so that such parts may be accessed in an emergency.



## **V. DESIGN AND PERFORMANCE PROVISIONS**

### **A. STANDARDS FOR INSTALLATION, REHABILITATION AND REPAIR**

CMSD requires all new or rehabilitated sewer installations be tested and inspected pursuant to the provisions of Title 6 of CMSD Operations Code and a permit is required for such connections. The primary design and performance standards the District uses in design and installations of new sewer systems are:

- Chapter 6.01 of the District Operations Code
- The Costa Mesa Sanitary District Standard Plans and Specifications for the Construction of Sanitary Sewers
- Standard Specifications for Public Works Construction ("Green Book").
- American Public Works Association Standard Plans for Public Works Construction

The standards listed above outline construction specifications for installing new wastewater systems, pump stations, and other appurtenances; and for rehabilitation and repair of existing wastewater systems. Design criteria include specifications for items such as pipe materials, minimum sizes, minimum cover, strength, minimum slope, trenching and backfill, structure standards, and other related provisions. All new construction, rehabilitation, or repair of the sanitary sewer system adheres to these standards.

Additionally, CMSD has standardized its use of equipment in the pumping stations for ease of maintenance and replacement. This includes the pumps, liquid level indicators, electrical components, valves, piping and telemetry. CMSD is implementing no-dig pipeline rehabilitation as one of the methods for replacement. The Sanitary District considers no-dig technology to be the future answer to pipeline rehabilitation as systems reach their life expectancy. Parts of the Sanitary District's system will be 100 years old in 2050 and although vitrified clay pipe may have a life expectancy far greater than 100 years, CMSD believes no-dig rehabilitation methods will be the standard rehabilitation practice. In FY 16 CMSD will be conducting a review and evaluation of its current design standards to ensure the organization is considering the standards used by others in the collection system industry. This standard review will include the evaluation of new technology that are being used in the industry and are available to service CMSD.

### **B. STANDARDS FOR INSPECTION AND TESTING OF NEW AND REHABILITATED FACILITIES**

CMSD's standard public works contract provides the work is not placed into service and accepted by the Board of Directors until inspection and testing is completed. Additionally, no dedication will be accepted and no tie into CMSD facilities will be

allowed where the District Engineer has not approved the plans and drawings and has not inspected the project during its course of construction (CMSD Operations Code Section 6.01.070).

CMSD provides continuous inspection during the construction of sewer facilities and believes that proper installation is the key element to insure proper operation and maximum life expectancy. Inspection and testing of new or rehabilitated facilities ensures that the established standards are being implemented in the field. Acceptance testing for gravity sewers can include: low pressure air test or water test to identify leakage, mandrel test to identify deflection of flexible pipe, and television inspection to identify grade variations or other construction defects. CMSD adheres to these standards for inspection and testing of new or rehabilitated facilities that are outlined in the above listed standards.

## **VI. OVERFLOW EMERGENCY RESPONSE PLAN**

The Overflow Emergency Response Plan (OERP) is developed as part of the CMSD Sewer System Management Plan. The purpose of the plan is to establish guidelines and measures to protect public health and the environment in case of an accidental overflow.

In the case of an overflow, CMSD shall dispatch the appropriate crews to investigate, identify the cause, and provide appropriate action to minimize the effects of the overflow on public health and quality of surface waters. The OERP further specifies the required notification and reporting that is necessary for local and state agencies.

Appropriate CMSD personnel will be required to read the OERP and familiarize themselves with the procedures. The OERP should be kept in an easily available location for all utility personnel and public access reference.

### **A. SSO NOTIFICATION PROCEDURES**

#### Normal Work Hours

The normal working hours for CMSD office staff for answering emergency calls is from 7:30 am to 4:30 pm Monday through Thursday and 7:30 am to 3:30 pm every Friday. When a report of an SSO is made, the front office staff takes the information from the caller and communicates this information to the Wastewater Maintenance Superintendent or to the person in charge of the Wastewater Maintenance Division when the superintendent is on leave. The Wastewater Maintenance Superintendent or the person in charge will report to the site to assess the situation and take appropriate action.

#### After Hours

Outside of regular business hours, CMSD's general phone number (949) 645-8400 has information on who to call for after-hours emergencies, and the Costa Mesa Police Department Dispatch follows CMSD procedures for SSO's. Also, the City of Newport Beach Utilities Department and the County of Orange Public Works Department has emergency contact information for CMSD. Because the majority of after-hours emergency calls for gravity sewer SSOs pertain to private small size sewers, the first responder is C&R Drains, a local plumber. C&R Drains is under contract to CMSD to provide first responder service and has the ability to unclog any private sewer backup. They are trained how to read sewer and storm drain atlas maps and their first responder must have maps, CMSD's SOP reports, tarps, sandbags and SSO warning signs in his/her vehicle at all times. In addition, C&R Drains first responder must bring a high pressure jetter equipment to all after hour calls.

If upon arrival at the SSO C&R Drains finds the backup to be in a CMSD sewer main, C&R Drains will call the CMSD's on-call personnel who will respond to investigate and take appropriate action.

If there is a sewer alarm from one of the sewer pumping stations, all CMSD's Wastewater Maintenance Division staff, including the District Engineer and General Manager will receive the alarm via cellular phone text and email.

All CMSD staff and field crews have preprogrammed cellular phones to facilitate instant communications. In addition back-up phone numbers or contact information shall be available for all critical personnel and listed in the chart of contact persons. Should cellular phone communications be down during the emergency, CMSD has low band two-way radios for use to communicate between District staff, field crews and the Water Emergency Response Organization of Orange County (WEROC) if need be.

## **B. APPROPRIATE RESPONSE TO ALL OVERFLOWS**

CMSD policy is to respond to all spills within the CMSD service area – and even provide mutual aid outside CMSD – whether on public or private property and to take all steps possible to prevent the spills from reaching the storm drains, flood control channels, or waters of the State, all in accordance with the waste discharge requirements.

Organization of this document details the lines of authority and responsibilities of CMSD personnel during an emergency. Because CMSD provides only wastewater and trash collection services, CMSD has equipment and manpower dedicated solely to wastewater system maintenance, operation, and emergency response.

## **C. REGULATORY NOTIFICATION PROCEDURES**

If a SSO occurs, it is required that certain regulatory agencies be contacted. The following reporting criteria explain when notifications should be sent and the various forms that are required. Regulatory notification procedures are administered by the District's Engineer.

### **1) Oral Notification**

As a first priority during a Category 1 sewer spill, the General Manager will immediately notify the California Office of Emergency Services (Cal-OES) (not later than two hours after becoming aware of the discharge) by phone that a spill has occurred. The General Manager will then notify Orange County Health Care Agency (OCHCA), Orange County Public Works and the Santa Ana Regional Water Quality Control Board. . CMSD notifies OCHCA by phone on all private property spills that are not fully recoverable immediately upon discovery.

Category 1 sewer spills are spills from CMSD sanitary sewer system of any volume that:

- a. Reach surface water and/or reach a drainage channel tributary to a surface water; or
- b. Reach a Municipal Separate Storm Water System (MS4) and is not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly.

Each of the following will be notified in the case of a Category 1 sewage spill:

Cal-OES	(800) 852-7550 (within two hours after being notified of the spill)
OCHCA	(714) 628-7008
RWCQB	(951) 782-4130 Fax: (951) 781-6288
OCPW	(877) 897-7455

Category 2 spills are discharges of untreated or partially treated wastewater of equal or greater than 1,000 gallons that did not reach surface water, a drainage channel, or a MS4 unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.

Category 3 spills are all other discharges of sewage that result from a failure in the Agency's sanitary sewer system.

## **2) Written Report**

For Category 1 spills, CMSD will adhere to the following written procedures:

- Within 24 hours of notification of a Category 1 spill, CMSD will certify to the appropriate RWQCB, by phone or with a follow up fax, that Cal-OES and OCHCA were notified.
- Within 3 business days of being notified of the spill event, CMSD will certify the initial report using the CIWQS online SSO Reporting System
- Within 15 calendar days of the conclusion of the SSO response and remediation, CMSD will certify the final report using the CIWQS online SSO Reporting System.
- CMSD will update CIWQS and re-certify the SSO report as new or changed information becomes available. The updates will be submitted as soon as new information is verified. All updated reports will be certified.

For Category 2 spills, CMSD will adhere to the following written procedures:

- Within 3 business days of being notified of the spill event, CMSD will certify the initial report using the CIWQS online SSO Reporting System.

- Within 15 calendar days of the conclusion of the SSO response and remediation, CMSD will certify the final report using the CIWQS online SSO Reporting System.
- CMSD will update CIWQS and re-certify the SSO report as new or changed information becomes available. The updates will be submitted as soon as new information is verified. All updated reports will be certified.

For Category 3 spills, CMSD will adhere to the following written procedures:

- Within 30 calendar days after the end of the calendar month in which the SSO occurred, CMSD will submit a certified report using the Online SSO Reporting System. The report will include the information to meet the GWDR requirements.

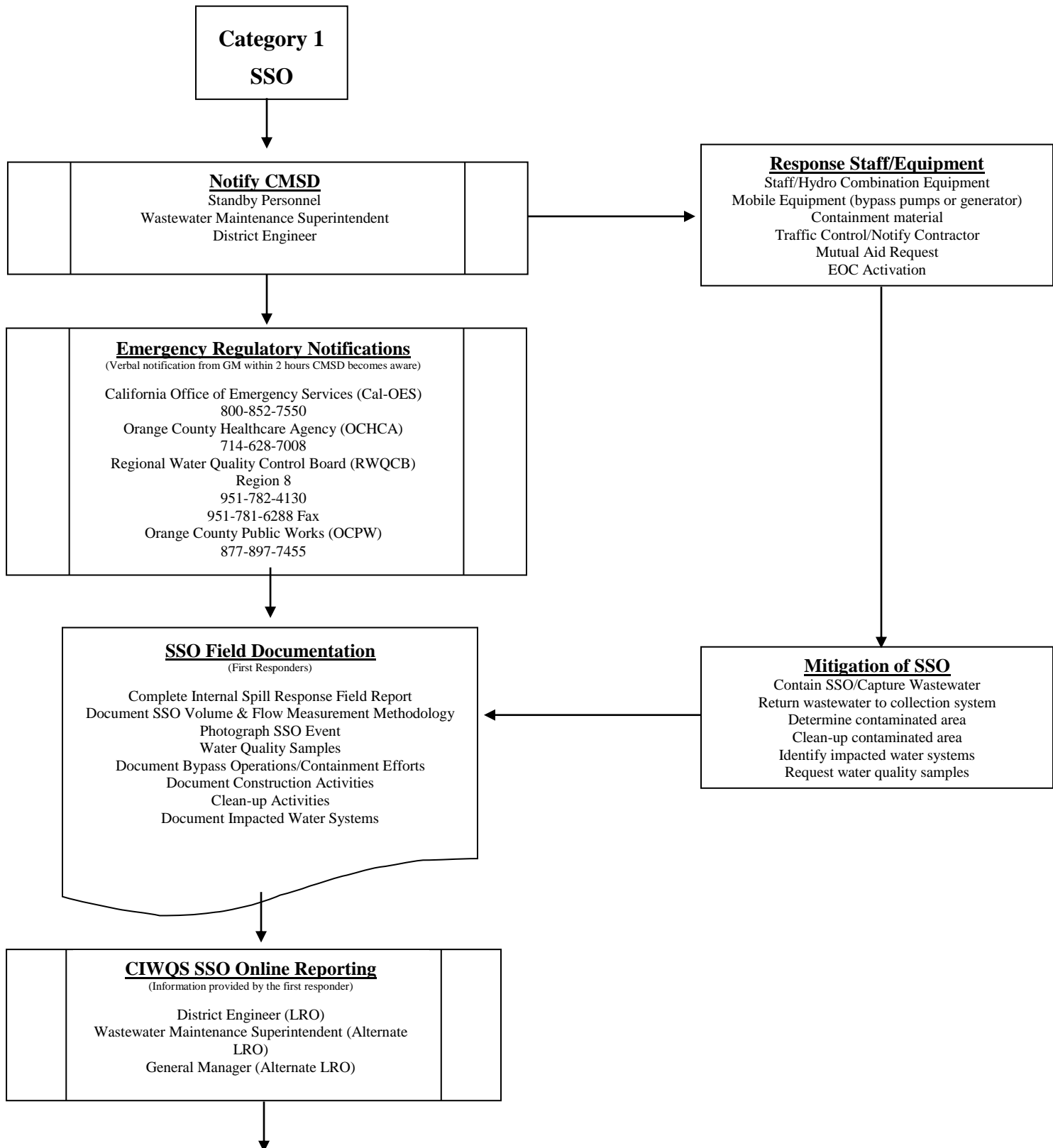
The District's Engineer is responsible for overseeing the reporting process. The District Engineer receives the spill report from the Wastewater Maintenance Superintendent and drafts up the required report with the consideration given to volume calculations, vacuum and wash down operations, cause of spill, timeliness of response, etc. The reports are located in CMSD's Standard Operating Procedures for responding to SSOs. After discussions are complete, the report is finalized and submitted to the General Manager for review. Once approved by the General Manager, the District Engineer transmits the spill report to the appropriate authorities.

As required in the Monitoring and Reporting Requirements, CMSD also completes the annual questionnaire by the end of December each year.

#### D. TRAINING PROCEDURES

All Wastewater Maintenance Division personnel, including the District Engineer, District Inspector, General Manager and C&R Drains, who have a role in responding to, reporting, and/or mitigating a wastewater collection system overflow receive annual training on the contents of this OERP. The training includes emergency operations, such as traffic and crowd control, procedures for volume estimation and SSO start time determinations. Periodic field drills and exercises are conducted to assure the Wastewater Division personnel practice under actual conditions.

CMSD maintains records for all OERP training provided in support of this plan. The records for all scheduled training courses and for each overflow emergency response training include date, time, place, content, name of trainer(s) and names of attendees.

**Figure 6-1: SSO Response Flow Chart**

**eFile SSO Documentation**

(Create a new SSO folder)

File Completed Internal Spill Response Field Report  
Document SSO Volume & Flow Measurement Methodology  
File Photograph SSO Event  
File Water Quality Sample Results  
Documented Bypass Operations/Containment Efforts  
Documented Construction Activities  
Documented Clean-up Activities  
Documented Impacted Water Systems  
File Required Technical Report, if required



## E. EMERGENCY RESPONSE OPERATIONS

The Wastewater Division personnel adheres to the response procedures described in Chapter 3 of CMSD's Standard Operating Procedures (SOP) for Sanitary Sewer Overflows. Every wastewater maintenance employee has a copy of the SOP and the document is stored in CMSD's fleet. In addition, C&R Drains have copies of the SOP in their vehicles and the General Manager and District Engineer have copies as well. The response procedures described in Chapter 3 are as follows:

The first responder's priorities are:

- ✓ To follow safe work practices.
- ✓ To respond promptly with the appropriate equipment.
- ✓ To evaluate the cause of spill and determine responsibility.
- ✓ To stop the spill and restore the flow as soon as possible.
- ✓ To contain the spill.
- ✓ To minimize public access to and/or contact with the spilled sewage.
- ✓ To promptly notify the General Manager, District Engineer and/or appropriate CMSD personnel in the event of a major SSO.
- ✓ To return the spilled sewage to the sewer system.
- ✓ To restore the area to its original condition (or as close as possible).

The first responder is responsible for following safety procedures at all times. Special safety precautions must be observed when performing sewer work. Special consideration should be given to following all local traffic, confined space, and safety procedures.

All wastewater system calls require a response to the reported location of the event in an attempt to minimize or eliminate an overflow. During normal working hours, staff must respond to the site immediately and initiate response activities. After normal working hours the first responder must respond to the site of the problem and initiate response activities within 60 minutes after initial reporting of the spill to the District. C&R Drains must respond to the scene with their high pressure jetter trailer unit. If the responder cannot be at the spill location within 60 minutes after the spill, then the late response shall be reported per the requirements in Chapter 6 of the SOP.

The first responder should determine appropriate response measures based on the circumstances and information provided by the caller (e.g. weather and traffic conditions, small backup vs. sewage flowing on the ground, etc.). If additional help is needed, contact other employees, contractors, agencies and/or equipment suppliers. Based on available information, the first responder should determine if a combination sewer cleaning truck and/or a spill response vehicle is needed.

Upon arrival at the site, the first responder should:

- ✓ Note arrival time at spill site (include in Sanitary Sewer Overflow Field Report Form).
- ✓ Verify the existence of a sewer system spill or backup.
- ✓ Field verify the address and nearest Cross street, making sure it's part of the District's sewer/conveyance system.
- ✓ Identify and clearly assess the affected area and extent of spill.
- ✓ Comply with all safety precautions (traffic, confined space, etc.)
- ✓ Contact caller, if time permits.
- ✓ Take pictures of the impacted area.
- ✓ Always notify the District Engineer and/or the General Manager, particularly if:
  - The spill appears to be large, in surface water or drainage channel tributary to a surface water, or there is doubt regarding the extent, impact, or how to proceed; or
  - Additional help is needed for line cleaning or repair, containment, recovery, lab analysis, and/or site cleanup.
  - Make sure persons required to report the spill to other agencies are notified and have all needed information.

Upon arrival at the location of a spill into a house or a building, the first responder should evaluate and determine if the spill was caused by a blockage in the lateral or in CMSD's owned sewer main, caused either by a backup in the sewer main line or nearby O&M activities.

- ✓ If a blockage is found in a property owner's lateral, it should be clearly communicated that it is not CMSD's responsibility to work on a private lateral. Block the spill if wastewater is entering or will enter storm drain system. Inform property owner that he/she has thirty minutes to restore flow or CMSD will use C&R Drains and the property owner will be billed for the services, including staff's time. Take pictures.
- ✓ If a backup in the main line is found to have caused the SSO in a house or building, relieve the blockage in the main line.

The first responder should attempt to remove the blockage from the system and restore flow to the area. Using the appropriate cleaning tools, the field Crew should set up downstream of the blockage and hydro-clean upstream from a clear manhole. The flows should be observed to ensure that the blockage does not recur downstream.

If the blockage cannot be cleared within a reasonable time, or system requires construction repairs to restore flow, then initiate containment and/or bypass pumping. If assistance is required, immediately contact other employees, contractors, agencies and equipment suppliers.

The first responder to a potential pump station or force main failure should:

- ✓ Determine whether flow can be restored within a reasonable time.
- ✓ If it appears that flow cannot be restored within a reasonable time or if the conveyance system facility requires construction and/or repairs, then employ CMSD's Overflow Emergency Response Plan for pumping stations.
- ✓ If assistance is required, immediately contact other employees, contractors, agencies and equipment suppliers as required.

The first responder should attempt to contain as much of the spilled sewage as possible using the following steps:

- ✓ Determine the immediate destination of the overflowing sewage.
- ✓ Plug storm drains using available equipment and materials to contain the spill, whenever appropriate. If spilled sewage has made contact with the storm drainage system, attempt to contain the spilled sewage by plugging downstream storm drainage facilities.
- ✓ Contain/direct the spilled sewage using dike/dam or sandbags.
- ✓ Pump around the blockage/pipe failure/pump station or vacuum flow from upstream of the blockage and dispose of downstream of the blockage to prevent further overflow.
- ✓ Take pictures of the containment area.
- ✓ When an SSO occurs inside of a house or building, the first responder should provide a copy of the residential sewage contamination flyer in Appendix 3 of the SOP and the property owner should be instructed to follow these guidelines:
  - Keep all family members and pets away from the affected area.
  - Place towels, rags, blankets, etc between areas that have been affected and areas that have not been affected.
  - Do not remove any contaminated items
  - Turn off the HVAC system
  - Move any uncontaminated property away from the overflow area.

Barriers shall be installed to prevent the public from having contact with the sewage if possible. Signs should be posted to keep pedestrians away from contact with spilled sewage. Do not remove the signs until directed by the District Engineer.

SSO Field Reports are located in the SOP document and consistent with the September 2015 Guide for Development and Updating SSMPs.

In addition, CMSD has also developed an Emergency Response Plan for the majority of the sewer pumping stations within the District. The stations without the emergency response plans are planned for abandonment. The Emergency Response Plans contain the procedures to be implemented to prevent an SSO should the pump station become inoperable or a major emergency, such as a downed bridge that contains a force main, occurs. The plans include calculations of the number of pumper trucks required, two different pre-determined driving routes to two disposal points while avoiding potential high traffic or disaster points such as bridges, emergency contact list, etc. These major emergency plans were completed in July 2009 and will be reviewed again for accuracy in FY 16. A copy is present in all the field vehicles, in the Wastewater Maintenance Superintendent, General Manager and District Engineer's offices.

## **VII. FOG CONTROL PROGRAM**

Studies have shown that FOG is one of the leading causes for SSOs. Even though the last FOG related SSO in CMSD was in 2012 it is still important to implement a FOG Control Program because of 506 food service establishments (FSE) within CMSD service area. In recent years CMSD has also put an emphasis on preventing residential FOG from entering the wastewater system. CMSD has retained the firm of EEC Environmental to manage its FOG program at a yearly cost of \$108,000. Approximately five staff members from EEC perform functions in the FOG program including engineers, administrators, and inspectors.

In addition to EEC, CMSD contracts with Orange County Sanitation District to coordinate FOG Best Management Practices (BMPs) inspections from the Orange County Health Care Agency (OCHCA). These inspections complement the EEC inspections giving CMSD a two-pronged approach for insuring the FSEs follow the prescribed practices in the FOG notebook developed for each FSE.

### **A. PUBLIC EDUCATION OUTREACH PROGRAM**

CMSD's contractor EEC has prepared and distributed a FOG notebook to each FSE inside CMSD service area. The notebook includes log sheets for interceptor cleaning, employee education, BMPs, guidelines, and posters.

Additionally, CMSD has made available, on its website, educational materials regarding Fats, Oils and Grease (FOG) and the sewer system. The site contains the following educational materials that can be downloaded by the public:

- Stop the FOG - Keep Fats, Oils, & Grease Out of Your Drain brochure (English & Spanish version)
- Homeowner's Guide to Sewer Lateral Maintenance.
- Residential FOG Recycling video.
- Kitchen Best Management Practices for FOG
- FAQs about FOG
- Grease Interceptor Diagram

The District also issues a quarterly newsletter with information regarding keeping Fats, Oils and Grease (FOG) out of the sewer system.

In 2011, the District implemented its residential FOG Recycling Program to coincide with traditional holidays (e.g. Thanksgiving, Passover, Christmas, etc.) where residents will be able to properly dispose their grease. Residents can deliver their jug filled grease to the Orange Coast College (OCC) Recycling Center, which is open to the public seven days a week. A contractor will periodically arrive at OCC to remove the grease and transport it to a recycling facility where it will be recycled for reusable products such as bio-fuel, candles, soap, etc.

## B. FOG DISPOSAL PLAN

The District requires all new commercial construction and existing commercial properties that have been found responsible for previous SSOs to install appropriate grease-reducing devices, including grease interceptors. The interceptors are required to be inspected and pumped out by a licensed company on a regular basis, normally on a quarterly basis.

Grease hauling companies serving the Costa Mesa area are shown in Table 7-1 and FOG disposal facilities serving the Costa Mesa area are shown in Table 7-2. The source of this information is <http://www.calfog.org/Hauler.html#Orange> and <http://www.calfog.org/GreaseFacilities.html>.

**Table 7-1: Grease Hauling Companies Serving Orange County**

COMPANY	PHONE NUMBER	WEBSITE
Ameriguard Maintenance Services	800-347-7876, Ext. 14	N/A
Grand Natural, Inc.	855-519-5550	<a href="http://www.greasecollection.com">http://www.greasecollection.com</a>
Coastal Byproducts	805-845-8086	<a href="http://www.coastalbyproducts.com">http://www.coastalbyproducts.com</a>
JR Grease Traps and Interceptor Service	323-997-9602	<a href="http://www.greaseservices.com">http://www.greaseservices.com</a>
New Leaf Biofuel	619-236-8500	<a href="http://www.newleafbiofuel.com">http://www.newleafbiofuel.com</a>
One More Time	800-624-5504	N/A
SMC Grease Specialist	951-788-6042	N/A
Superior Service Recycling	888-888-4121	N/A
Triple A Pumping & Jetting	800-284-2617	<a href="http://www.tripleapumping.com">http://www.tripleapumping.com</a>

**Table 7-2: Grease Rendering/Drop Off Points for Costa Mesa Area**

Company	Address	Phone Number	Grease Type	Type of Operations
Baker Commodities, Inc.	4020 Bandini Blvd Los Angeles, CA (Vernon, CA)	323-269-6177 800-427-0696	Yellow, brown	Grease recycler. Drop off location and grease trap cleaning/hauling
Darling International	2626 E 25 <sup>th</sup> St Los Angeles, CA	800-447-3273	N/A	Drop off location and grease trap cleaning/hauling
One More Time	4144 Bandini Blvd Los Angeles, CA (Vernon, CA)	800-624-5504	Yellow	Used cooking oil only
Orange County Sanitation District, Plant No. 1	10844 Ellis Ave Fountain Valley CA	714-593-7428	Yellow, brown	Primary grease drop off point for grease haulers serving CMSD
Southwest Processors	4120 Bandini Blvd Los Angeles, CA (Vernon, CA)	800-900-3366	N/A	Grease recycler. Drop off location and grease trap cleaning/hauling
West Coast Rendering	4120 Bandini Blvd Los Angeles, CA (Vernon, CA)	323-261-4176	N/A	Small operation. Typically only accept grease from known hauler (Triple A). No grease trap service.
Orange Coast College Recycling Center	Adams Ave between Harbor Blvd & Fairview Rd Costa Mesa, CA	714-432-5131	Yellow	Used cooking oil from residential households. No commercial grease is accepted.

### C. LEGAL AUTHORITY TO PROHIBIT DISCHARGES TO THE SYSTEM

A permit from CMSD is required to connect to, use or maintain a connection to t CMSD's facilities (CMSD Operations Code Section 6.04.060 (a)). Any person, firm or corporation that connects or discharges to CMSD's sewerage system without a valid permit is guilty of a misdemeanor (CMSD Operations Code Section 6.04.060 (f)). CMSD also has the right to terminate a property from CMSD's service (District Operations Code Section 6.02.080).

Every owner, tenant and persons using property shall have a duty not to cause, permit or allow the accumulation of grease in CMSD's wastewater line so that sewage spills may occur. Such persons shall use reasonable methods to reduce grease accumulation in CMSD's sewer lines including but not limited to reducing or eliminating the grease that is deposited in the sewer and utilizing enzymes and similar products that prevent grease build-up. No person shall discharge grease into the wastewater system so as to cause an accumulation in CMSD's lines so as to substantially contribute to the possibility of a sewage overflow (CMSD Operations Code Section 6.07.040).

#### D. GREASE REMOVAL DEVICE REQUIREMENTS

CMSD's Operation Code requires that no Food Service Establishment (FSE) shall discharge into CMSD's system without obtaining a permit from CMSD describing the business operations and discharge and any FOG prevention measures being undertaken or to be undertaken to reduce the discharge of FOG into the District's system in accordance with this chapter (Section 6.07.050). In addition, FSE's are required to install, operate and maintain approved type and adequate sized grease interceptors (Section 6.07.070). Furthermore, All new commercial construction of FDRs shall have a grease interceptor that has been approved by the District unless the developer demonstrates, to the District's satisfaction, that such a device is not necessary based on engineering findings which are set forth in writing (Section 6.07.080) and existing FSEs undergoing remodeling or a change in operations, or FSEs that change ownership, shall be required to install a grease interceptor (Section 6.07.090(b)).

In addition, the Orange County Sanitation District, which is the sewer treatment agency for all the wastewater generated within the CMSD boundaries, has adopted Ordinance No. OCSD-25 regarding FOG control which requires the installation of interceptors on all food service establishments, including existing establishments, to install appropriate grease-reducing devices, including sewer interceptors.

#### E. INSPECTION OF GREASE PRODUCING FACILITIES

CMSD has adopted four grease control ordinances, Ordinance 41, in 2003, Ordinance 51, in 2005, Ordinance 81 in 2010, Ordinance 113 in 2016 codified as Chapter 6.07 of CMSD's Operations Code, giving CMSD legal authority to implement a comprehensive grease control program. CMSD retained EEC Environmental (EEC) to manage CMSD's FOG Control Program. EEC performs several types of FSE inspections to ensure FSEs comply with FOG regulations and FOG Control Program requirements. The types of inspections performed by EEC are identified below.



Permitting Inspections

EEC physically inspects and educates FSEs within CMSD that are new to the FOG Program. These FSEs include new FSEs and existing FSEs that have a change in ownership or name change requiring re-permitting.

For those FSE that have been identified in the vicinity of hot spots or identified as FOG sources, EEC meets and discusses, with the FSE management, the enforcement options that are available to CMSD and the steps that the FSE can take to avoid additional enforcement.

Grease Removal Equipment (GRE) Inspections

EEC physically conducts GRE inspections for FSEs with a grease interceptor or grease trap to evaluate compliance with the FSEs grease removal equipment requirements.

Kitchen Best Management Practice (BMP) Inspections

EEC conducts kitchen BMP inspections for FSEs without GREs and evaluates compliance with the FSEs BMP requirements.

Combined Kitchen BMP and GRE Inspections

EEC conducts combined kitchen BMP and GRE inspections for FSEs

Compliance Inspections

EEC conducts compliance inspections where it is determined by CMSD that a follow-up inspection is required for a non-compliance issue that has been identified in previous BMP, GRE or FOG source wastewater pipe inspections. This may include the issuance of written warnings or notice of violations (NOVs) to FSEs that are found to be in non-compliance of the FOG control ordinance or permit.

CCTV Source Inspections

EEC assesses hot spots to identify FSEs that are discharging FOG in CMSD's wastewater collection system.

Enforcement Inspections

These inspections are conducted when elevated enforcement of the permit requirements are required or when the revocation of the FSEs grease interceptor installation Conditional Waiver, Waiver or Variance is required. Due to the serious nature of these inspections, EEC attempts to meet with the FSE manager or property owner to discuss the enforcement and the FSE's plans to achieve compliance.

## F. FOG PROGRAM STAFFING

FOG Control Program staffing consists of a combination of CMSD staff and contractor staff. EEC provides one full time equivalent (1 FTE) staff person dedicated to CMSD's FOG Control Program. EEC staff person is responsible for the following activities:

- FOG Control Management, including database and GIS management.
- FSE inspections
- FSE compliance follow-up
- FOG Control Program enforcement
- FOG Control Program education, outreach and customer support
- CCTV coordination and source inspection

In addition to EEC staff, the District Engineer provides staffing (0.25 FTE) for CMSD's FOG Control Program. District Engineer is responsible for the following activities:

- Grease removal device plan review and processing
- FOG Control Program variance and waiver evaluation and processing.

## G. CLEANING SCHEDULE FOR SEWER SYSTEM SECTIONS SUBJECT TO FOG BLOCKAGES

CMSD has identified a number of problem areas that are more prone to blockages and SSOs. These areas are typically inverted sewer siphons and areas with excess grease build-up. These enhanced cleaning areas, or 'hot spots', are shown on the GIS map prepared by EEC.

In addition, CMSD employs preventive maintenance as a means to address areas prone to FOG accumulation in the system. CMSD has identified areas in the wastewater system with FOG issues through a combination of maintenance crew knowledge, past grease related SSOs, CCTV data and the collaboration of CMSD's "Hot Spot" Committee, which meet quarterly and consist of the general manager, district engineer, wastewater maintenance superintendent, cleaning crew, EEC staff, and district inspector. Appendix 1 is a map where known FOG related hot spots are located along with CMSD FSEs. CMSD addresses these locations through a combination of FOG source control, wastewater cleaning, and CCTV. CMSD will continue to adjust the wastewater cleaning frequency of pipes to address the FOG issue while optimizing the amount of wastewater cleaning performed.

In FY 16, CMSD will be televising its entire wastewater system in search for wastewater pipes with FOG issues along with other pipe deficiencies.

#### H. SOURCE CONTROL MEASURES FOR 'ENHANCED MAINTENANCE AREAS'

CMSD and Orange County Sanitation District, which is the sewer treatment agency for all the sewage generated within the CMSD boundaries, have adopted ordinances requiring installation of appropriate grease-reducing devices, including sewer interceptors, on all new commercial developments and existing food service establishments. Furthermore, CMSD has adopted an ordinance allowing CMSD to require the installation of appropriate grease-reducing devices, including sewer interceptors, on existing properties that are found to be causing or potentially causing SSOs.

Additional source control measures for the 'Enhanced Maintenance Areas' identified by CMSD consist of a public education and awareness program that includes distribution of the CMSD's pamphlets for restaurant and homeowner grease control, FOG video on the CMSD's website and a newsletter. CMSD has also distributed its grease control notebooks to all 506 food service establishments inside CMSD. The notebook contains a poster, BMP list, and other information relative to CMSD's grease control program.

## **VIII. SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN**

The District has a Sewer Master Plan that assesses the capacity of the sewer system. The main purpose of a Master Plan is to compare the projected peak flow from the land uses adopted in the General Land Use Plan with the carrying capacity of the sewer lines. The Sewer Master Plan was last updated in 2005 and will be next updated after the hydraulic model analysis is completed in FY 17.

### **A. EVALUATION**

CMSD's Sewer Master Plan incorporates a hydraulic model analysis of the wastewater mains in the system. The peak flow estimates are estimated using flow coefficients developed by CMSD based on land usage. The flow coefficients used by CMSD have been compared to the coefficients used by Orange County Sanitation District and the City of Los Angeles and found to be reasonable. Special cases, such as high-rise office buildings, hotels and high volume industrial uses are evaluated separately using a peak flow estimate for the individual parcels.

The capacity of each line is determined and those lines unable to handle future master planned flows are identified. The current system capacity is able to handle, without surcharge, the current dry weather and wet weather peak sewer flows.

### **B. DESIGN CRITERIA**

CMSD has adopted the industry standard of designing new sewer lines up to 18 inches in diameter to be flowing no more than half full at peak wet weather flow. Lines 21 inches or larger are designed to be flowing no more than three quarters full at peak wet weather flow. However, when analysis of existing conditions are completed for the purposes of determining when additional capacity is required, flows above these limits, but less than completely full are accepted. At no time is wastewater allowed to flow in a surcharged or pressurized condition.

### **C. CAPACITY ENHANCEMENT MEASURES**

CMSD's Sewer Master Plan includes the short and long term CIP to address identified hydraulic deficiencies. Funding for the Capital Improvement Plan is from fees collected from new construction and from wastewater rates that are assessed on property tax rolls.

CMSD is also active in reducing Inflow and Infiltration (I/I). CMSD has ruled out Infiltration as a source of water in the system but that position may change after the entire system is televised in FY 16 and 17. CMSD has identified Inflow as a source of water and has plugged and sealed manhole covers in identified flood zones, low lying areas and particularly manhole covers located in gutters and alley flow lines

## D. CIP SCHEDULE

CMSD's Sewer Master Plan was last updated in 2005 and will be next updated after the hydraulic modeling analysis is completed in 2017. CMSD had identified short and long term needs for renewal and replacement of existing infrastructure. The prioritization of these projects is based on the following criteria:

- ✓ Age or life expectancy
- ✓ Flow capacity and/or flow rate
- ✓ Proximity to waterways
- ✓ Risk to public health and the environment

Table 8-1 identifies CMSD's short term CIP Schedule while Table 8-2 is CMSD's long term CIP Schedule. CIP projects are funded from CMSD's Asset Management Fund. The purpose of the Asset Management Fund is to accumulate reserves for capital improvements. This fund has a reserve requirement of \$5,000,000. Annual Reserve Contributions are made with transfers from the Wastewater Fund estimated by the Asset Management Program. Transfers back to the Wastewater Fund are in accordance with CMSD's capital budget plan and provide funding for capital projects. Both schedules below may be modified after the completion of the hydraulic modeling analysis.

**Table 8-1: CMSD Short Term CIP Schedule**

Name	Description	Total Project Cost	Funding Source	Estimated Completion
President Pump Station and force main	Redesigning and constructing a wet well and refurbishing the force main	\$3,200,000	Asset Management Fund	2017
Indus Gravity Pipeline Relining	The Indus Gravity Pipeline is 1,200 feet of pipeline located in backyard easements of several private homes. The pipeline is infested with roots. This project will rehabilitate the pipeline by lining it with cured in place pipe (CIPP).	\$353,000	Asset Management Fund	Complete
Harbor and South Coast Plaza Force Main Upgrades	Harbor Force Main is nearly 600 feet long made of cast and ductile iron pipe. It is 59 years old and needs replacement. South Coast Plaza Force Main is 470 feet long made of ductile iron pipe. It is 49 years old and needs replacement.	\$959,852	Asset Management Fund	2016-17

Generator at 23 <sup>rd</sup> Street Pump Station	An on-site generator will be installed at this station to ensure redundancy.	\$340,000	Asset Management Fund	Complete
Elden Pump Station Piping and Valve Replacement	Elden Pump Station was constructed in 1989. Pipeline and valves are corroded and need replacement.	\$525,000	Asset Management Fund	2016-17
Aviemoire Pump Station Upgrades	Aviemoire Pump Station was constructed in 1980. Replacing existing pumps, bases, valves, piping, guide rails and by-pass valves.	\$100,000	Asset Management Fund	2016-17
Victoria Force Main Upgrades	Victoria Force Main is 940 feet long. 88% of the pipeline is made of cast iron pipe. The remaining 12% is made of PVC pipe. The pipeline is 41 years old and needs replacement.	\$320,000	Asset Management Fund	2017-18
Wastewater Pipeline Rehabilitation (Grade 5)	Repair pipeline segments rated Grade 5, imminent failure, from 2016-17 CCTV. Likely to fail within the next five years.	500,000 to \$1,000,000	Asset Management Fund	2017-18

**Table 8-2: CMSD Long Term CIP Schedule**

Name	Description	Total Project Cost	Funding Source	Estimated Completion
Gisler Force Main Upgrades	Gisler Force Main is 1,160 feet in length and made of cast iron pipe. The pipe is 55 years old, but the gallon per minute is 250 making this station one of the lowest flowing stations in the system	\$520,000	Asset Management Fund	2018-19
Elden Force Main Upgrades	Elden Force Main is the largest force main in the system. It is 3,290 feet long and the pipeline is 18" in diameter. It is only 25 years old, but due to the flow (3,750 GPM) and close proximity to the Delhi Channel and Upper Newport Bay, an analysis of the pipeline will be conducted to determine condition and replacement, if necessary	\$500,000	Asset Management Fund	2018-19
Iowa Force Main Upgrades	The Iowa force main is 220 feet long and made of asbestos cement pipe (ACP). The pipeline is 44 years old. ACP is very vulnerable to seismic activity as evident in the 2014 Napa earthquake. This pipe will be replaced with PVC or cast iron. The flow rate is 150 GPM.	\$100,000	Asset Management Fund	2019-20
Wastewater Pipeline Rehabilitation (Grade 5)	Evaluate Grade 4 segments from the 2016-17 CCTV to determine how many segments transitioned to Grade 5.	\$500,000	Asset Management Fund	2019-20
Rehabilitate Brick Manholes	Brick manholes are vulnerable to seismic activity. The manholes will be rehabilitated by applying cured-in-place epoxy fiberglass composite liner.	\$500,000	Asset Management Fund	2019-20
21 <sup>st</sup> Street Force Main Upgrades	21 <sup>st</sup> Street force main is 430 feet long and made of ductile iron pipe. It is 24 years old and has a flow rate of 825 GPM	\$200,000	Asset Management Fund	2020-21

## IX. MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

CMSD will evaluate the performance of its wastewater system at least annually using the performance measures identified in Appendix 2. CMSD will update the data and analysis of performance measures at the time of the evaluation. The data from the performance measures will be maintained in CMSD's electronic work order system (Cityworks). In addition, CMSD will track the following performance indicators to assess the success or failure of meeting established goals.

**Table 9-1: Gravity, Pump Station, and Force Main SSOs by Calendar Year**

CY	Gravity SSOs	Pump Station SSOs	Force Main SSOs
2011	3	2	1
2012	4	0	0
2013	1	1	0
2014	2	0	1
2015	2	0	0

**Table 9-2: SSOs by Cause, 2011 through 2015**

CY	Roots	Debris	FOG	Paper/Rags	Capacity Related	Vandalism	Pipe Failure	Other
2011	2	1	1	0	0	0	1	1
2012	2	0	2	0	0	0	0	0
2013	1	0	0	0	0	0	0	1
2014	2	0	0	0	0	0	1	0
2015	2	0	0	0	0	0	0	0



Figure 9-1: SSO Trends 2011-15

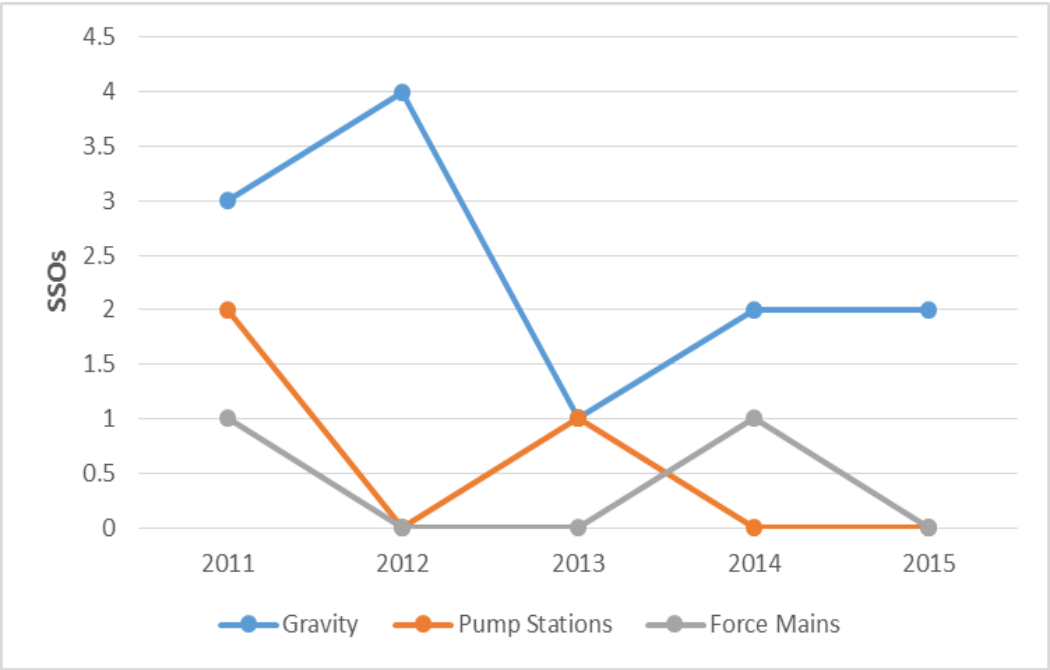
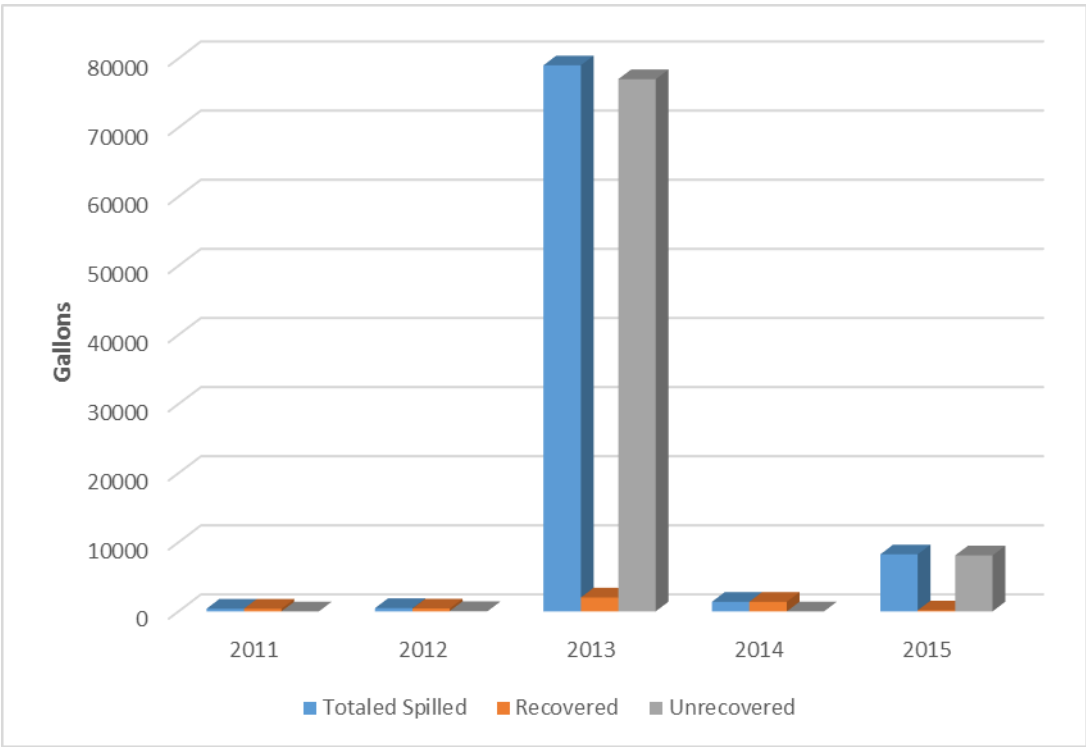


Figure 9-2: Trend in Volume of Sewer Main Overflows, Volume Reaching Surface Water and Volume Recovered



CMSD will update its SSMP at least every two years. CMSD will determine the need to update based on the results of the biennial audit and the performance of its sanitary sewer system. CMSD will complete an update within one year following identification of the need for the update.

CMSD staff will seek approval from the CMSD Board of Directors for any significant changes to the SSMP. The authority for approval of minor changes such as employee names, contact information, or minor procedural changes is delegated to the General Manager. Copies of the current SSMP document will be available to all interested parties on CMSD's website.

## **X. SSMP PROGRAM AUDITS**

CMSD will audit its SSMP every two years. Table 10-1 below show when previous audits were performed as well as a schedule for future SSMP audits. The SSMP audit will determine whether the SSMP meets the current requirements of the WDR, whether the SSMP reflects CMSD's current practices, and whether CMSD is following the SSMP. The audit will be conducted by an outside independent consulting firm that has experience performing SSMP audits. The results of the audit will be presented to the Board of Directors during an open public meeting.

**Table 10-1: Past SSMP Audits and Future Scheduled Audits**

<b>SSMP Audit Schedule</b>	<b>Name of Auditor</b>	<b>Status</b>
May, 2011	EEC Environmental	Completed
May 2013	EEC Environmental	Completed
September 2015	Willdan Engineering	Completed
May 2017	N/A	Future
May 2019	N/A	Future
May 2021	N/A	Future

## **XI. COMMUNICATIONS PROGRAM**

CMSD has developed the following Communications Program to ensure the public is aware on the development, implementation and performance of the SSMP. The Program provides the public the opportunity to comment on the SSMP and the implementation of the Plan.

- CMSD produces a quarterly newsletter that is mailed to over 21,000 households. CMSD will highlight the SSMP in the newsletter and encourage public comments about the Plan.
- Every month at the Board of Directors Study Session meetings, the Board will receive a report of sewer spills volume and location. Study session meetings are open to the public.
- SSMP audit results will be presented to the Board of Directors during one of their standard regular meetings where a presentation of the SSMP performance will be made available to the public.
- The SSMP document is available on CMSD's website for the public to review and comment.
- Sewer overflow performance information is available to the public on the State Water Resources Control Board (SWRCB) California Integrated Water Quality System (CIWQS). Go to:

[https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportSSOServlet?reportAction=criteria&reportId=sso\\_main](https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportSSOServlet?reportAction=criteria&reportId=sso_main). Type in "Costa Mesa Sanitary District" in the "Enter a sanitary sewer agency name" field. Click on "Generate Report" button.

**[Emergency Contractors Next Page]**

**EMERGENCY CONTRACTORS**

Atlas Underground 1295S. East End Ave. Pomona, CA 91766 Contact: Hector Loya	(909) 622-7738 Office (909) 622-7174 Fax (909) 628-4485 Home (909) 876-6909 Pager
ESSCO Pumps & Controls 4935 Telegraph Road Los Angeles, CA 90022 Contact: John Ivins	(323) 261-2181 Office (323) 261-1523 Fax  (562) 412-9091 Cell
Jamison Engineering 17197 Newhope St. Ste. J Fountain Valley, Ca 92708 Contact: Don Jamison	(714) 620-5048 24-HR (714) 434-9196 Office (714) 434-3762 Fax
Jimni Systems, Inc 11161 Jeffery Road Irvine, CA 92602 Contact: Jim Pleasant	(949) 770-7654 Office
Kennedy Pipeline 61 Argonaut Aliso Viejo, CA 92656-1423 Contact: John Shoffeitt	(949) 380-8363 Office (949) 380-0172 Fax  (949) 770-1241 Home
Manhole Adjusting 9500 Beverly, Rd Pico Riviera, CA 90660-2135 Contact: Abe Gonzalez Leo	(323) 558-8000 Office (323) 558-8045 Fax  (949) 718-6625 Cell

## National Plant Services, Inc.

1461 Harbor Ave.

(800) 445-3614 Office

Long Beach, CA 90813-2741

(562) 495-1528 Fax

Contact: Dennis Keene

## Schuler Engineering Corporation

564 West Bateman Circle

(951) 738-9215 Office

Corona, Ca 92880-2011

(951) 738-0162 Fax

Contact: Bruce Schuler

(951) 277-2627 Home

## Mike Kilbride, Ltd.

P.O. Box 3341

(949) 548-0106 Home

Newport Beach, CA 92659-8341

(949) 548-1616 Fax

Contact: Dennis Ruiz

(714) 240-0741 Cell

## GCI Construction

245 Fischer Avenue

Costa Mesa, CA 92626

Contact: Terry Gillespie

(714) 721-8661 Cell

**Plumbers**

C&amp;R Drains

(714) 641-1545 24-HR

1525 W. MacArthur, #11

(714) 641-3189 Fax

Costa Mesa, CA 92626

Contact: John Melrose

(714) 875-7800 Cell

Kim Melrose

(714) 915-2403 Cell

**Pumper Trucks**

Darling International/Minuteman

2624 S. Hickory Street

(800) 628-7867

Santa Ana, CA 92707

Contact: Dispatch

United Pumping Service

14016 E. Valley Blvd.

(626) 961-9326 Office

City of Industry, CA 91746

(626) 931-3166 Fax

Contact: Dispatch

Orange County Pumping Inc.

630 S. Hathaway

(714) 953-6700 Office

Santa Ana, CA 92705

(714) 541-8421 Fax

Contact: Margaret or Sandy

(714) 410-4845 Pager

Services Available:

- 1500 & 3000 gal mild steel tank vacuum truck for sewage
- 5000 gal mild steel tank vacuum truck for sewage

Ocean Blue Environmental Services, Inc.

925 West Esther Street

Long Beach, CA 90813

(800) 990-9930 24 hours

Contact: Ed Acosta

(562) 755-4698

Rain for Rent

6400 Fischer Road

(909) 653-2171 Office

Riverside, CA 92507

(909) 656-1926 Fax

- By-pass pumping equipment and materials

Contact:

Wayne Trawinski

(909) 772-1065 Cell / Pager

**Video Inspections**

Pro Pipe (714) 666-0436 Anaheim Office  
1181 N. Kramer Place (800) 386-1497 Arizona Office  
Anaheim, CA 92806 (714) 632-7924 Fax  
Contact: Mike Hollis

## Services Available:

- Combo Trucks, Hydro flushers, Rodders, Balling, Bucketing Machines
- Video Inspection

## National Plant Services, Inc.

1461 Harbor Avenue (800) 445-3614 Office  
Long Beach, CA 90813-2741 (562) 495-1528 Fax  
Contact: Dennis Keene (714) 772-6250 Home

## Services Available:

- Combination Sewer Cleaning Truck with 2-man Crew
  - Industrial Vacuum truck with 2-man Crew for grit and debris removal
- 3000 gal. mild steel tank vacuum truck for sewage

**Southern California Edison Company**

Operating Department (800) 655-4555 24-Hr  
(714) 895-0226 Office  
(714) 895-0230 Fax

## Planning Department

(714) 895-0244 Office  
(714) 934-0892 Fax

**Traffic Control**

## Traffic Control Services

1881 Betmor Lane (714) 937-0422 Office  
Anaheim, CA 92805 (714) 937-1070 Fax  
Contact: Craig Terry (800) 222-8274 24-HR



## Traffic control equipment and services

## Coastal Traffic Systems

1261 Logan Avenue

(866) 641-3744 24-HR

Costa Mesa, Ca 92626

(714) 641-3738 Fax

Contact: Duty Person

## California Barricade

1550 E. Saint Gertrude Pl.

(800) 327-8844 24-HR

Santa Ana, Ca 92705

(714) 558-3821 Fax

Contact: Duty Person

## OCSD

(714) 962-2411 24-HR

**Emergency Generator Suppliers**

## US Rental

(714) 842-7765 24-HR

16300 Gothard St.

(714) 843-2029 Fax

Huntington Beach, CA 92647

## Towable Generator

60 KVV Generator, \$140.00/day

## Charles King Company

2841 Gardenia Ave.

(562) 426-2974 Office

Signal Hill, CA 920755

(562) 426-9714 Fax

Contact: Butch King

(310) 505-5655 Cell

Steve

(310) 505-7524 Cell

**Contractor Equipment**

Anaheim

(714) 535-7731 Office

(714) 535-1239 Fax

Riverside

(951) 682-6823 Office

(951) 682-3225 Fax

(951) 416-7674 Pager

Generators - 3 phase

30 KW to 360 KW/240 to 440 Volts

5 to 6 in stock; Bypass water pumps in stock

**Portable Toilets**

Andy Gump

533 W. Collins

(800) 540-1700 Office

Orange, CA 926867

(714) 538-1246 Fax

Contact: Bill Wedgeworth

A - Throne Co.

1850 E. 33<sup>rd</sup> St.

(800) 446-4669 Office

Long Beach, CA

(562) 981-1197 Office

(562) 426-9896 Fax

**Household Hazardous**

Ocean Blue Environmental Services

925 W. Esther St.

(800) 990-9930 Office

Long Beach, CA 90813

(562) 624-4127 Fax

Contact: On Duty Manager

United Pumping Service

14016 E. Valley Blvd.

(626) 961-9326 Office

City of Industry, CA 91746

(626) 961-3166 Fax

Contact: Dispatch

**Costa Mesa Sanitary District  
Sewer System Management Plan  
Change Log**

<b>Date</b>	<b>SSMP Element/Section</b>	<b>Description of Change/Revision Made</b>	<b>Change Authorized by:</b>
5/11/16	II/B Page 6	Changed person responsible for SSMP audit from Senior Management Analyst to Management Analyst II	General Manager
5/11/16	II/B Page 6	NPS no longer provides CCTV. Pro Pipe is the contractor that performs this service.	General Manager
5/11/16	Figure 2-1 Page 7	Updated Org Chart	General Manager
5/11/16	Table 2-1 Page 8	Replaced Senior Management Analyst with Management Analyst II	General Manager
5/11/16	Table 3-1 Page 13	The Board of Directors will be adopting Ordinance 113 on May 26, 2016 that establishes Best Management Practices for Food Service Establishments	Board of Directors
5/11/16	VII/D Page 45	Ordinance No. 113 will be adopted by the Board of Directors on May 26, 2016. Ordinance No. 113 revises the District's FOG Program.	Board of Directors
5/11/16	VII/E Page 45	Revised this section to include Ordinance No. 113	General Manager
8-19-16	IV.B.1 Page 14	Revised cleaning the entire system to 18 months	General Manager
8-19-16	Table 4-1 Pages 18-19	City of Costa Mesa is no longer maintaining portable generators. YC Power, a private entity is responsible for preventive maintenance.	General Manager
8-19-16	IV.D Page 27	Two employees obtained their Grade 1 certification and another employee is studying for the Grade 2 certification exam.	General Manager
8-19-16	Table 8-1 Page 50	Revised chart by removing Westside Pump Station Abandonment because project was suspended by OCSD and noted Indus lining and 23 <sup>rd</sup> Street pump	General Manager

		station generator are projects that are now complete.	
10-3-16	Figure 2-1 Page 7	Org Chart revised to reflect current position of Permit Technician, which is vacant and title change for Accountant position to Senior Accountant	General Manager
10-3-16	Table 4-1 Page 18	Added the word "Annual" in front of "PM Performed by" column to describe this function is performed on an annual basis.	General Manager